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1991 LOWER COOK INLET AREA

ANNUAL FINFISH MANAGEMENT REPORT

by
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1991 COMMERCIAL FISHERIES STAFF

The finfish operations for the Commercial Fisheries Division, Lower Cook Inlet, employed seven permanent employees, six seasonal employees, and one non-permanent employee, all of whom participated in various area management programs during the 1991 season. Thanks is extended to all personnel for a successful 1991 season.

Permanent Employees during the 1991 season:

Wesley A. Bucher	Area Management Biologist
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Laurence Livingston	Fish & Wildlife Technician II

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ANNUAL MANAGEMENT REPORT
LOWER COOK INLET
1991

COMMERCIAL SALMON FISHERY

INTRODUCTION

The Lower Cook Inlet (LCI) management area is comprised of all waters west of the longitude of Cape Fairfield, north of the latitude of Cape Douglas, and south of the latitude of Anchor Point and has been divided into five fishing districts (Figure 1). The Barren Islands District is the only non-salmon fishing district and the remaining four districts have been divided into approximately 30 subdistricts and sections to facilitate management of discrete stocks of salmon and herring.

The 1991 Lower Cook Inlet salmon fishery was another disappointment to area fishermen following the poor 1990 season. The total harvest of 1,191,354 fish accounted for less than half of the preseason forecast (Figure 7, Appendix Table 5). Fishing effort was comparable to previous levels with 68 seine and 20 set gillnet permit holders making deliveries (Appendix Table 1). The harvest was nearly equal to the long-term (1971-90) average with an exvessel value of $1.50 million (Table 7, Appendix Table 2).

Over 67% of the sockeye salmon harvest was produced by two FRED Division lake stocking projects at Chenik Lake in the Kamishak District and Leisure (China Poot) Lake in the Southern District. Returns of naturally produced pink salmon, normally the dominant species both in numbers of fish and exvessel value, were mixed throughout Lower Cook Inlet. The harvest (829,000) was 10% less

than the long-term average. Pink salmon abundance was notably weaker in the Southern District compared to the other three districts. Pink salmon returns to Tutka Hatchery and a satellite release site at Halibut Cove, both in the Southern District, have comprised the bulk of Lower Cook Inlet pink salmon harvests during recent years. However, Tutka Hatchery returns contributed less than 200,000 fish to the commercial catch this season.

PRESEASON FORECAST

The 1991 Lower Cook Inlet salmon harvest was projected to be very good and considerably above the previous two years. The majority of the harvest was to be from hatchery and lake stocking enhancement projects. Formal total run forecasts for natural salmon returns other than pink salmon were not available because long-term escapement and age-weight-length data are limited for those species. However, catch projections were calculated based on relative estimates of parental run size, average age composition data, and recent relative productivity patterns. Harvest potential and actual catches for all species in 1991 are listed below:

SPECIES	PROJECTED HARVEST	ACTUAL HARVEST	1971-1990 AVERAGE
Chinook	[a]	1,419	831
Sockeye	346,500	317,947	138,080
Coho	11,800	19,047	10,931
Pink	2,150,000	828,709	920,338
Chum	167,000	24,232	118,614
TOTAL	2,675,300	1,191,354	1,188,793

[a] No targeted commercial harvest

Strong sockeye returns were anticipated in all areas, with the exception of English Bay in the Southern District. Enhanced runs to Leisure and Chenik Lakes were expected to dominate the returns. Aside from the excellent escapements to Chenik Lake, 1.0 million and 2.6 million fry (originating from Crooked Creek Hatchery) were stocked in 1987 and 1988, and the lake was fertilized to increase food production. The majority of those fish left the lake as smolt in 1988 and 1989, with adult returns expected in 1990 and 1991. Significant numbers of adult sockeye were also expected to return from two additional lake stocking projects at Hazel Lake in the Southern District and Kirschner Lake in the Kamishak District.

Due to generally good pink salmon escapements in 1989, the 1991 LCI pink salmon harvest was expected to exceed two million fish, however there was uncertainty regarding survival of juvenile pinks in the Outer District exposed to crude oil from the Exxon Valdez oil spill while emigrating from the estuaries. Very few pinks were expected in the Eastern District, but there was potential for significant harvests in the Outer District at Desire Lake Creek, Port Dick, and in Port Chatham. Returns to all naturally producing streams in the Southern District were expected to provide only limited harvests, with Humpy Creek and Seldovia Bay having the best prospects.

Returns to the Tutka Bay Hatchery and a secondary fry release site at Halibut Cove Lagoon were expected to be the mainstay of the pink salmon fishery. A return of 830,000 pinks was expected at Tutka Bay with an additional 290,000 fish projected for Halibut Cove Lagoon. Over 29 million fry were released in 1990 at these locations and good ocean survival rates should have produced adult returns approaching 1.0 million fish.

Excellent escapements were achieved in the three major pink streams in the Kamishak District in 1989 and these spawners were expected to produce a 585,000 pink salmon harvest in Kamishak Bay District

in 1991. In contrast, significant chum salmon harvests appeared unlikely in 1991. Weak returns were anticipated as a result of severe flooding in the fall of 1986, and the poor showing of age-4 chums in 1990.

SUMMARY BY SPECIES

Chinook Salmon

The harvest of chinook salmon, not normally a commercially important species in Lower Cook Inlet, was 71% higher than the 1971-90 average and the fifth highest on record (Appendix Table 12). The catch of 1,419 was primarily due to enhanced production in Halibut Cove Lagoon and Seldovia Bay (Table 2). Set gillnets accounted for 60% of the catch (Table 1).

Sockeye Salmon

The total LCI harvest of 317,947 sockeye was nearly equal to the 1988 record high catch of 319,000 and was over 100,000 fish higher than the 1971-90 average (Figure 8, Appendix Table 13). Although the harvest fell below the preseason projection of 346,500 fish, and only accounted for 28% of the landings in 1991, this year's catch comprised over 77% of the total value of the Lower Cook Inlet fishery (Table 7, Appendix Table 2).

Early season returns of sockeye salmon to Mikfik Creek in the Kamishak Bay District were comparatively strong with nearly 13,000 fish harvested and an estimated escapement of 9,700 fish (Table 3, Appendix Table 23). The escapement exceeded the goal of 5-7,000 fish, but the majority of the excess escapement occurred late in the season after fishing effort had shifted to other areas. Returns to FRED Division enhancement projects, which account for the bulk of the sockeye harvested in LCI, were mixed. Despite

large fry releases, excellent natural escapements, and lake fertilization, the Chenik Lake harvest of 60,000 fish was less than half of that expected (Table 3, Appendix Table 16). In contrast, Kirschner Lake returns produced a catch of 43,000 fish (Table 3), almost three times higher than forecast. In the Southern District, the Leisure Lake stocking project produced a catch of 96,000 fish (Table 3), nearly equal to the forecasted 100,000, but the 21,000 fish harvested in Neptune Bay, assumed to be hatchery returns to nearby Hazel Lake, accounted for only half of the pre-season projection. The Southern District sockeye harvest was nearly three times the 20-year average and the highest ever recorded (Appendix Table 13).

Natural sockeye runs to Delight/Desire Lakes in East Nuka and Aialik in the Eastern District were poor although maintenance level escapements were achieved. Escapements of 4,075 and 8,200 sockeye for Delight and Desire respectively, were below the goals of 10,000 fish for each system (Table 3, Appendix Table 23). Returns to the Port Dick Subdistrict, another small hatchery-produced run, were only half of the pre-season projection of 9,200.

Sockeye returns to the English Bay Lake system were up from previous years. A complete closure of the commercial, sport, and subsistence fisheries again this year resulted in a total estimated escapement of 7,000 fish, nearly equal to the long-term average for this system (Table 3, Appendix Table 23).

Coho Salmon

The coho harvest of 19,047 fish was the second highest LCI total on record and was 20% higher than the recent 10-year average (Appendix Table 17). The bulk of the harvest came from the Southern District where the catch was almost equally split between set gillnets and purse seines (Table 1).

Based on early showings in the Southern District and upper Cook Inlet, strong coho returns were also anticipated in the Kamishak District. The Kamishak and Douglas River Subdistricts were opened to fishing five days per week, but slow catches coupled with weak prices forced the fleet to abandon the late season effort. Adverse weather and stream conditions in late August and September precluded aerial escapement estimates in the Kamishak District. The Silver Salmon Derby in Resurrection Bay and the Cook Inlet Aquaculture Association (CIAA) cost recovery effort at Bear Lake accounted for most of the Eastern District harvest, comprising 38% of the LCI total (Tables 1 and 4).

Pink Salmon

Returns of pink salmon, normally the dominant species in both numbers of fish and exvessel value, were mixed throughout Lower Cook Inlet. The harvest of 829,000 was 10% less than the long-term average (Appendix Table 18). Pink salmon abundance was notably weaker in the Southern District compared to the other three districts. For a second year running, the Tutka Hatchery return was a bitter disappointment. Despite a projected harvest of 1.1 million pinks from Tutka Bay and Halibut Cove Lagoon, a secondary release site for Tutka Hatchery fry, these areas contributed only about 200,000 fish to the commercial catch this season. After broodstock collection, which accounted for 103,100 fish, and cost recovery (101,837 fish), very few fish were left to harvest in the common property fishery (Table 9).

The Outer and Eastern Districts produced the only significant pink catches, with Port Dick, Windy Bay, and Port Chatham accounting for 290,000, 49,000, and 7,500 fish, respectively, while Aialik Bay added another 167,000 fish (Table 5). The pink harvest in the Aialik Subdistrict set a new catch record for the Eastern District,

exceeding the previous high of 156,000 landed in 1980 (Appendix Table 18). The record catch can undoubtedly be attributed to the strong pink returns to Prince William Sound.

The Kamishak District, particularly Bruin River, produced fair numbers of pinks, but the fleet made little effort to catch west side pinks this season. Poor prices, combined with processors' resistance to buy anything but the highest quality fish, discouraged the fleet from targeting pinks there. Pink salmon escapement goals were achieved in all major producing systems with the exception of Humpy Creek in the Southern District (Table 5, Appendix Table 24).

Chum Salmon

The LCI chum salmon harvest of 24,200 fish was the fifth lowest on record. The catch was only 20% of the long-term average and continued a dramatic decline in chum salmon production for a third consecutive year (Figure 12, Appendix Table 21). The poor returns were generally anticipated and conservative fishing schedules were implemented early in the season throughout the Kamishak and Outer Districts to protect chum salmon stocks. The conservative strategy was successful as the majority of escapement goals were achieved, although some west side systems still fell below desired levels, most notably the McNeil and Kamishak Rivers (Table 6, Appendix Table 25).

EXVESSEL VALUE

The estimated exvessel value of the 1991 salmon harvest in Lower Cook Inlet was $1,495,232 (Table 7, Appendix Table 2). Purse seines, which normally account for the majority of the catch, comprised $1,368,667 or 92% of the total (Table 7). Set gillnets accounted for $122,283. Average prices paid to fishermen were as

follows: chinook - $1.12/lb., sockeye - $0.83/lb., coho - $0.42/lb., pink - $0.13/lb., and chum - $0.27/lb. Prices paid in 1991 are compared to previous years in Appendix Table 3. These figures do not include postseason bonuses paid by many of the processors.

DISTRICT INSEASON MANAGEMENT SUMMARIES

Southern District

Set Gillnet Fishery

Commercial set gillnetting in Lower Cook Inlet is limited to specific beaches within the Southern District. Although an Area H set gillnet permit is allowed to fish in both Upper and Lower Cook Inlet, there are only five beach areas in Lower Cook Inlet, all located along the south shore of Kachemak Bay, where set gillnets may be used (Figure 2). The limited areas provide only enough productive fishing sites to accommodate approximately 25 permits.

The Southern District set gillnet harvest totalled 31,909 fish in 1991 (Table 1). Although the mixed-species harvest was 50% below the 1971-90 average for a second straight year, species composition of the catch was similar to the long-term average, with the exception of pink salmon harvests, which were only about one-sixth of the average (Appendix Table 7). Typically the gillnet harvest is comprised of 50% sockeye salmon, 30% pink salmon, 5% chums, 5% cohos, and less than 1% chinook. An additional 24 hours of fishing per week was allowed in the Halibut Cove area from July 5 through the end of the season, resulting in an increased harvest of all species in this area.

Coho catches by set gillnets were the highest since 1982, a significant improvement over the 1990 season. The catch of 5,011

coho was 46% higher than the 1981-90 average (Appendix Table 7). The high catches were a reflection of the strong area-wide coho returns to lower Kenai Peninsula streams.

Several factors contributed to the low set gillnet harvests in 1991. The sockeye salmon return to the English Bay Lakes system was poor for the seventh consecutive year. In anticipation of a weak return, the Port Graham/English Bay Subdistrict was closed to commercial set gillnet fishing on June 3 prior to the regulatory opening. Even with complete closures of the subsistence, commercial and recreational fisheries, the sockeye salmon escapement to the English Bay system reached only 7,000 fish, 30% below the low end of the desired escapement range (Table 3, Appendix Table 23). After the sockeye run was nearly over, the subsistence fishery was reopened (July 11), but the commercial fishery was not allowed to resume because of the weak pink salmon returns to Port Graham River.

Fishing effort also affected set gillnet harvests in the Southern District. The number of set gillnet permits fished this season (20) was down by 13 from the 1975-90 average (Appendix Table 1).

Seine Fishery

Sockeye Salmon

Purse seiners accounted for 88% of the 149,699 sockeye salmon harvested in the Southern District in 1991 (Table 1). The overall catch was approximately 87% higher than the recent 10-year average for the district (Appendix Tables 6 and 13).

The Halibut Cove, China Poot Bay and Tutka Bay Subdistricts were again opened to purse seining five days per week beginning Monday June 25 in anticipation of strong returns to Leisure Lake. The preseason harvest projection for returns to the Leisure Lake

stocking and fertilization project was estimated at 100,000 fish. However, changes in the management strategy for China Poot Subdistrict were implemented this season, largely dictated by CIAA's desire to conduct cost recovery harvests there. CIAA signed a contract (IHP 91-009) to assume fiscal responsibilities and share in the planning for the sockeye salmon production at the state-owned Crooked Creek Hatchery which produces sockeye fry for both the Leisure and Hazel Lake stocking projects as well as lake stocking projects in the Kamishak Bay District. A (draft) amendment to the Crooked Creek Hatchery Annual Management Plan allowed CIAA to harvest a portion of the sockeye salmon returning to this area for recovery of operational costs expended towards sockeye salmon enhancement in Lower Cook Inlet. The combined sales harvest goal for the sockeye return to Leisure and Chenik Lakes was $64,400, split equally between the two locations. Assuming an average price of $1.00 per lb. and an average weight of 4.0 lbs., CIAA needed to harvest approximately 8,050 sockeye salmon in order to achieve the revenue goal of $32,200 at China Poot.

State regulations for private nonprofit hatcheries stipulate that a PNP permit holder may harvest salmon for the hatchery only in specially designated harvest areas. Therefore, before any CIAA sales harvests could occur, Special Harvest Areas (SHA) had to be created. An Emergency Order was issued on June 24, designating and establishing SHAs for CIAA in both the China Poot and Chenik Subdistricts. The China Poot SHA was defined as all marine waters of the China Poot Subdistrict east of a line connecting 59°34'00" N. latitude, 151°17'30" W. longitude and 59°33'30" N. latitude, 151°17'32" W. longitude (Figure 3).

The plan for the China Poot cost recovery was to satisfy the CIAA sales harvest goal in two 12-hour periods during the first two weekends of the season (from 6:00 p.m. Sunday, June 30, until 6:00 a.m. Monday July 1, and from 6:00 p.m. Sunday July 7 until 6:00

a.m. Monday, July 8). This would allow members of the association to participate in the cost recovery effort without sacrificing fishing time during the weekday openings of the common property fishery. If the revenue goal had not been achieved by July 15, then the SHA was to remain continuously open to CIAA and the China Poot Subdistrict was to be closed to the common property fishery until the goal was reached. The subdistrict closure was intended to allow a more rapid buildup of fish and therefore facilitate the cost recovery effort.

Because only an estimated 400-500 fish were showing in the China Poot SHA for the first cost recovery opening on Sunday June 30, CIAA agents made no attempt to conduct a harvest, but rather elected to wait for a stronger showing. By the second scheduled opening date on July 7, the number of fish which had accumulated was sufficient to warrant an effort and CIAA landed 6,105 lbs. of sockeyes. As the first two openings only accounted for 20% of the revenue goal, a four-day opening of the SHA for CIAA concurrent with a closure of the commercial fishery was announced for Thursday July 11 through 6:00 a.m. Monday July 15. During that period another 13,500 lbs. of sockeye were landed, bringing the cumulative cost recovery harvest to $21,935 or 75% of the goal. After the standard five-day opening of the China Poot Subdistrict to the common property fishery, a fourth cost recovery harvest period was allowed from 6:00 a.m. Saturday, July 20, until 6:00 a.m. Monday July 22. CIAA efforts inside the SHA that weekend yielded an additional 7,944 lbs. of sockeye, bringing the cumulative cost recovery harvest to within 99% of the revenue goal for China Poot. The commercial fishery in the China Poot Subdistrict was subsequently allowed to continue on the standard five-day fishing schedule without further restriction.

The final commercial harvest in the China Poot Subdistrict amounted to 96,083 fish (Table 3), comprising 26% of the total LCI sockeye salmon harvest. Catches of 2-ocean sockeyes to nearby Hazel Lake,

a relatively new lake stocking project, occurred for the first time this season. Because brood stocks for both the Leisure and Hazel Lake stocking projects are the same, returns were difficult to evaluate. Nevertheless, at least 20,700 sockeyes were caught in Neptune Bay (Table 3), the anticipated harvest area for Hazel Lake returns. Fish returning as a result of these two projects undoubtedly contributed to purse seine catches in the Halibut Cove and Tutka Bay Subdistricts, as well as the China Poot Bay Subdistrict. In addition, personal use dip net fishermen and sport fishermen harvested an estimated 5,000 sockeyes at the head of China Poot Bay. The 1991 total return (including Hazel Lake) was estimated at 122,000 fish (Figure 9, Appendix Table 15).

Pink Salmon

Returns of pink salmon to the Tutka Bay Hatchery and to the satellite rearing project in Halibut Cove Lagoon contributed to a total Southern District harvest of 253,962 pink salmon, less than half of the recent 10-year average (Table 5, Appendix Table 18). The opening of Halibut Cove Lagoon to seining was delayed until July 5 to allow the recreational fishery, targeting on hatchery reared chinook salmon, to continue through the 4th of July holiday without interference from the commercial seine fleet. In Tutka Bay fishing was allowed five days per week beginning June 24. Since Tutka Hatchery operations had been assumed by CIAA during the 1990 season, a preseason management strategy was developed and agreed upon by department staff, CIAA, and Cook Inlet Seiners Association (CISA). The plan called for hatchery incubators to be filled to maximum capacity if possible, and all excess fish (beyond brood stock and natural escapement requirements) were to be harvested for cost recovery to help offset operational expenses.

Early catches in the Tutka Subdistrict were poor, and aerial surveys of Tutka Lagoon failed to show a significant buildup of pink salmon. On July 5 the common property fishery was closed to

allow CIAA an opportunity to collect brood stock and harvest fish for cost recovery in the specially created Tutka Bay Special Harvest Area (SHA; Figure 4). The commercial purse seine fishery was restricted to waters outside of Tutka Bay proper. Inside waters remained closed to ensure adequate brood stock and natural escapement to Tutka Creek. Approximately 60,000 fish (32,000 females) were desired for hatchery brood stock, and an additional 10,000 pinks were needed to meet the natural spawning escapement goal for Tutka Creek.

Even prior to the midpoint of the run, it was recognized that the sales harvest goal established by CIAA would not be realized this season due to the poor returns. After brood stock needs had been met and it was no longer cost effective for CIAA to employ a seine vessel, cost recovery efforts were abandoned. The entire Tutka Bay Subdistrict was subsequently re-opened to commercial seining five days per week, effective at 6:00 a.m. Monday, August 5, until further notice. However, less than 1,500 fish were harvested after that date and the last delivery was reported on August 9.

The final commercial purse seine catch of pink salmon in Tutka Bay Subdistrict this season, excluding hatchery cost recovery, was only 12,404 fish (Table 9). After the egg-take harvest of 103,100 for brood stock, a total of 101,837 pinks were sold by CIAA for cost recovery (Tables 5 and 9). The pink salmon escapement of 16,820 fish (Table 5, Appendix Table 24) into Tutka Creek exceeded the desired goal of 10,000 fish, but was once again assumed to include a disproportionately high number of males discarded during hatchery egg-take operations.

Returns of wild pink salmon stocks to other systems in the Southern District were also weak as indicated by escapement and set gillnet catch per unit effort data for the Seldovia River and Barabara Creek Subdistricts. No seining was allowed in the Port Graham or Seldovia Subdistricts again in 1991. The season-long closures

allowed the midpoints of the desired spawning escapement range to be achieved in these two systems (Table 5, Appendix Table 24).

Humpy Creek was also expected to produce a significant harvestable surplus of pink salmon this season. However ground surveys indicated a cumulative escapement of only 666 fish through July 29. A closure of the Halibut Cove Subdistrict was announced for August 5 to reduce interceptions and bolster the escapement of pink salmon bound for Humpy Creek. At the same time waters of the China Poot Bay Subdistrict south and east of the Kachemak Bay Wilderness Lodge were closed to seining to protect pink salmon beginning to show there. The Humpy Creek Subdistrict was never opened to commercial fishing during 1991. With an escapement goal of 25-50,000 fish for Humpy Creek, the estimated escapement of 17,400 pink salmon was considered minimal for this stream (Table 5, Appendix Table 24).

Other Species

Southern District chum salmon returns were very poor for a second straight year. Only 1,962 chum salmon were harvested, nearly 80% below average for the district (Table 6, Appendix Table 21). Set gillnets accounted for the bulk of the harvest (Table 1) with 42% of the catch landed in the Tutka Bay Subdistrict (Table 6).

Although minor in total numbers of fish, the majority of the Southern District chinook harvest consists of incidental catches of adult fish returning to three separate enhancement projects and intended primarily for recreational anglers. The 1991 harvest of 1,399 chinooks was the fifth highest on record in this district (Appendix Table 12). The coho salmon harvest of 9,415 fish was the highest since 1980 and over twice the recent year (1981-90) average (Appendix Table 17).

Kamishak Bay District

Sockeye Salmon

The entire Kamishak Bay District opened to salmon seining by regulation on Monday, June 3, on the regular schedule of two 48-hour fishing periods per week. However, poor weather prevented the 12-boat fleet from fishing the first two days of the opening. The first landings were reported on June 7 when 2,492 sockeyes were delivered, but very few fish had moved into McNeil Lagoon or into the lower part of Mikfik Creek by that date. Another 6,824 fish were taken on Monday, June 10, following the regulatory weekend closure. This proved to be the peak day as catch rates rapidly declined thereafter.

An aerial survey conducted on June 12 showed an escapement into Mikfik Creek of 2,290 fish, mostly located in the lower creek and intertidal area. Because of the lagging escapement at Mikfik, the McNeil and Paint River Subdistricts were closed at 6:00 a.m. Thursday, June 13, with a cumulative catch of 12,500 sockeyes.

Results from another survey of Mikfik on June 14 showed an increase in the escapement rate with a cumulative estimate of 5,800 sockeyes. The majority of these fish were still located in the lower section of the creek up to the falls, but the first bend just below the lake contained approximately 2,500 fish indicating fish were actively moving upstream. Since the escapement level was within the 5,000 - 7,000 fish goal established for Mikfik Creek, the McNeil River Subdistrict was reopened to seining effective at 6:00 a.m. Monday, June 17, on two regular 48-hour weekly fishing periods. However, less than 400 sockeyes were landed after that date with the last delivery recorded on July 5. The fish continued to trickle into the creek well after the typical run timing was over. The final Mikfik Lake sockeye escapement of 9,700 was estimated from an aerial survey on July 25. The estimate was 38%

higher than the upper end of the desired escapement range of 7,000 fish (Table 3, Appendix Table 23).

While the McNeil Subdistrict was closed due to lagging escapement into Mikfik, fishermen shifted their efforts to the Kamishak and Douglas River areas. Normally effort would be directed towards the Chenik Lake sockeye return, however CIAA cost recovery activities, planned for the early part of the run, kept most fishermen from prospecting in the Chenik Subdistrict. Catches in the Douglas River Subdistrict proved to be above average for the seven-boat fleet with over 6,200 sockeyes landed between June 27 and July 4.

Preseason management strategy for the Chenik Subdistrict, as outlined in the amended Crooked Creek Annual Management Plan, was to satisfy the CIAA sales harvest goal of $32,200 at the beginning of the run so the fleet could work uninhibited in the area for the remainder of the season. As described earlier in the Southern District discussion for China Poot, an average price of $1.00 per lb. and an average weight of 4.0 lbs. was also assumed for the Chenik sockeye return. Therefore, CIAA needed to harvest approximately 8,050 sockeye salmon from the Chenik Subdistrict in order to achieve the combined LCI revenue goal of $64,400.

The Emergency Order creating the China Poot SHA on June 24 also designated and established the SHA for CIAA in the Chenik Subdistrict. The Chenik SHA was defined as all marine waters of the Chenik Subdistrict north of 59°12′30" N. latitude, south of 59°14′30" N. latitude, and west of 154°00′00" W. longitude (Figure 5).

On June 24 the Chenik SHA was closed to the common property fishery and opened to the harvest of salmon seven days per week by authorized agents of CIAA. Markers inside Chenik Lagoon were covered and fishing was allowed up to the stream mouth. The

remainder of the Chenik Subdistrict, as well as the Bruin Bay Subdistrict, was open to seining by the commercial fleet five days per week.

Aerial surveys of the Kamishak District during the week of June 24-29 were precluded by poor weather, but commercial catches were meager indicating runs were slow. Up to that time, no fish had been observed in Chenik Creek by technicians stationed at the lake.

A buildup of fish inside Chenik Lagoon was identified during an aerial survey on Sunday June 30 after the poor weather finally abated. A CIAA cost recovery harvest was conducted that afternoon, yielding a catch of 6,852 fish or 28,843 lbs. Approximately 8,000 lbs. remained to meet the revenue goal. After allowing another opportunity for fish abundance to increase inside the lagoon, an additional 7,450 lbs. were caught by CIAA on July 3, bringing the cumulative cost recovery harvest to 36,293 lbs. or 98% of the revenue goal for Chenik. With the run continuing to build and the revenue goal virtually achieved, the Chenik SHA was re-opened to the common property fishery five days per week effective at 6:00 p.m. Wednesday, July 3 until further notice.

Although the ADF&G adult enumeration weir at the outlet of Chenik Lake became operational on July 1, the first sockeye had yet to pass through the weir by July 12. Therefore, the decision was made to close the Chenik Subdistrict effective at 6:00 a.m. Monday July 15 to promote escapement. Even though the majority of sockeye salmon returning to Chenik Lake were produced from the Crooked Creek Hatchery stocking project, a natural spawning component is maintained by allowing an escapement of 10,000 fish into the lake. The commercial fleet had been harvesting approximately 2,500 to 3,500 fish per day in the subdistrict, suggesting that a four-day closure would be sufficient to achieve the desired escapement goal if the fish moved directly into the creek. Fishermen were advised that the area could be re-opened on short notice if weir counts

indicated that the escapement rate was building rapidly. Because the sockeye run is enhanced each year with hatchery fry releases, escapement throughout the duration of the run is unnecessary and therefore, management strategy made no attempt to secure escapement from all segments of the run.

Meanwhile sockeye salmon catch rates in the adjacent Bruin Bay Subdistrict (targeting on Kirschner Lake returns) remained consistently high, averaging 4,000 fish per day through the week of July 15-20. By July 17 the Chenik closure had resulted in approximately 2,000 sockeyes past the Chenik Lake weir, with another 1,000 fish estimated below the weir.

Through noon, July 24 the cumulative escapement count past the weir stood at 7,820 fish with an additional 950 fish estimated in the stream below the weir. Since the escapement rate indicated the escapement goal would be met within the next 24 - 48 hours, the Chenik Subdistrict was re-opened to seining five days per week effective at 6:00 a.m. Thursday, July 25, until further notice. The first day's catch after re-opening amounted to 11,300 sockeyes, bringing the total harvest through July 25 to nearly 60,000 fish. Landings declined abruptly after that date, and the final catch in the Chenik Subdistrict (including cost recovery harvests) totalled 60,397 sockeye, comprising 19% of the total LCI sockeye salmon harvest (Table 3, Figure 10).

The weir was monitored continuously from July 1 through July 30 with the cumulative escapement counts totalling 10,189 fish (Appendix Table 16). A total of 492 sockeyes were sampled at the weir for age-weight-length analysis.

Pink Salmon

Pink salmon returns to the Kamishak Bay District were expected to be strong with a preseason projected harvest of 585,000 fish.

Spawning escapements of pink salmon into Bruin River, Sunday Creek located in Rocky Cove, and Brown's Peak Creek in Ursus Cove during 1989 were estimated at 350,000, 103,000 and 120,000 fish, respectively. Because these escapements were considerably above the optimum escapement levels for these streams, there was much uncertainty regarding the production from the 1989 brood year. By mid-season it became apparent that these exceedingly large escapements were not likely to achieve even a 1:1 return/spawner ratio.

The Bruin Bay Subdistrict remained open to seining five days per week throughout the season to allow the fleet to target on Kirschner Lake sockeye salmon, however incidental pink salmon catches made during the early openings suggested only average returns. An aerial survey of Bruin River on July 25 revealed just 4,600 pinks. Few pinks were counted in Sunday Creek or Brown's Peak Creek on that same survey. By August 7, escapement rates had significantly improved and surveys indicated that escapement goals had finally been achieved in Bruin River and Brown's Peak Creek. Although only half of the Sunday Creek escapement goal had been met, that run also appeared to be building rapidly. In response, fishing in the Bruin Bay, Rocky, and Ursus Cove Subdistricts was allowed seven days per week beginning 6:00 a.m. Saturday, August 10.

Despite the unrestricted fishing schedule, poor prices offered for pinks discouraged the fleet from targeting pinks and only 47,800 pinks were harvested in the Kamishak Bay District in 1991. Table 5 gives catch and escapement estimates for each of the various subdistricts. Appendix Table 18 compares the 1991 catch with historical averages. Although the pink salmon harvest was over twice the 1971-80 average, it comprised only 45% of the 1981-90 average.

Chum Salmon

Chum salmon returns to the McNeil, Kamishak, and Douglas Rivers were expected to be low in 1991 and early-season catch per unit effort data for these three river systems, as well as aerial escapement estimates, indicated chum salmon abundance in the southern Kamishak District to be well below long-term averages. Therefore, the McNeil, Kamishak, and Douglas River Subdistricts were closed to seining effective 6:00 a.m. Monday July 8 to bolster escapements. Chum salmon escapement into McNeil River was estimated at less than 50 fish through Sunday July 7, while the cumulative chum catch for the entire Kamishak Bay District was less than 1,300 fish.

Another aerial survey of McNeil River on July 14 showed approximately 1,200 chums in the system, which was very low by historical standards for that time of year. The McNeil, Kamishak, and Douglas River Subdistricts remained closed to fishing to protect chum runs to all three drainages. Aerial surveys continued to monitor chum salmon escapements on a periodic basis, but escapement levels never were sufficient to warrant any openings targeting on chums. McNeil River chums were estimated at 2,200 on July 19, but had only increased to 3,700 on July 25. Chum counts in Bruin River totalled 700 fish on the July 19 survey and increased to 1,600 fish by August 7. Despite the five day per week fishing schedule in the Bruin Bay Subdistrict (to harvest Kirschner Lake sockeye), the incidental harvest of chums in the Bruin Bay Subdistrict totalled only 2,567 fish for the season (Table 6).

Table 6 provides catch and escapement estimates for chum salmon in each of the subdistricts, while Appendix Table 21 compares the 1991 catch with the historical averages. The total Kamishak District chum salmon harvest of 7,853 fish comprised only 10% of the 1981-90 average.

Outer District

Sockeye Salmon

The only significant sockeye salmon systems in the Outer District are Delight and Desire Lakes located in the East Nuka Subdistrict. However, aerial surveys once again confirmed the presence of sockeye salmon in "Ecstasy" Lake, the newly formed glacial lake system immediately north of Desire Lake. Two surveys of the drainage were conducted; the first on July 14 documented at least 100 fish, while the number of fish estimated on July 27 had increased to 300 fish. The staff has continued to monitor this "pioneering" stock with interest. In an effort to protect the new run, regulatory markers were erected in 1990 designating waters in the northern end of McCarty Fiord as closed to commercial fishing.

Aerial surveys of Delight and Desire Lakes were first flown on June 15. Only 20 sockeyes were observed at Delight and no fish were seen in Desire Lake although 2,500 fish were located inside the Desire Lake Creek markers. In response, the East Nuka Subdistrict was opened to seining at 6:00 a.m. Monday, June 17 on a schedule of two 48-hour fishing periods each week. However, less than 50 fish were harvested during the first fishing period, suggesting that the fish schooled inside closed waters had moved into the creek prior to the opening.

During the next two weeks, fishing effort amounted to 6-8 boats with a cumulative catch of 1,300 sockeye through June 27. Another aerial survey was conducted on June 28 showing 750 sockeyes in Delight Lake and 2,800 in Desire Lake with an additional 1,100 fish estimated inside the closed waters markers. Although the two 48-hour weekly fishing periods remained in effect through July 8, significant catches never materialized and the area was closed effective July 8 to bolster escapements.

By July 14 escapement into Desire Lake had significantly improved with an estimated 8,200 sockeyes in the lake and 800-1,000 fish schooled at the creek mouth. The escapement rate into Delight Lake remained slow with only 2,300 fish in the lake and 600 more in the freshwater lagoon near the creek outlet. Therefore waters within a two-mile radius of Desire Lake Creek were opened to seining on two regular 48-hour fishing periods beginning Monday July 15, while the remainder of the subdistrict remained closed to protect the Delight Lake run. The opening failed to produce much of a harvest; the two boats that stayed in the area landed only 42 fish between July 15-18, comprising the last deliveries of the season. The cumulative sockeye harvest in the East Nuka Subdistrict totalled just 1,773 fish. Table 3 provides the 1991 final catch and escapement figures for the Delight and Desire Lake systems, and Appendix Tables 14 and 23 shows historic catch and escapement figures for the last 30 years.

Approximately 9,200 sockeye salmon were projected to return to Port Dick Lake Creek in 1991 as a result of a FRED Division lake stocking project. The first observation of fish returning to this system was recorded during an aerial survey on July 14 when one small isolated school of fish was noted in front of the creek, but no fish were observed at the base of the falls. Subsequent surveys by ADF&G staff as well as commercial spotter pilots estimated between 600-2,500 sockeye present off the mouth of the creek, but actual numbers were difficult to estimate since they were mixed with schooling pink salmon. Because sockeye salmon returning to Port Dick are prevented from reaching the lake by a natural barrier falls near the mouth of the creek, no spawning escapement is necessary in this system.

Waters of the South Section of the Port Dick Subdistrict between the ADF&G regulatory marker near the mouth of Port Dick Lake Creek and a marker on the west side of Shelter Cove were opened to seining for a two-hour period on Monday, July 22. The opening was

timed to coincide with the high tide, allowing harvest of sockeye salmon without jeopardizing staging pink salmon stocks bound for Port Dick (head end) Creek. The two-hour period resulted in a harvest of 3,264 sockeyes, 810 chums, and 8,412 pinks. Fishermen reported that approximately 500 sockeyes remained after the opening. Another two-hour opening of the same area was allowed on Thursday July 25 to harvest the remainder. Although 1,300 sockeyes were taken in this and subsequent openings of the subdistrict, these were the only two openings specifically designed for the fleet to target the sockeye run.

Pink Salmon

Prior to the first two-hour opening for sockeye in Port Dick, aerial surveys on July 22 documented approximately 16,000 pink salmon on the salt water flats near Port Dick (head end) Creek. A ground survey of the creek conducted July 18 had indicated less than 100 pinks in the creek along with 700 chum salmon. Based on pink salmon catches made during the July 22 sockeye period, waters within the South Section of the Port Dick Subdistrict southeast of an ADF&G marker on the west side of Shelter Cove at approximately 151°15′ W. longitude were opened to seining on two regular 48-hour weekly fishing periods effective at 6:00 a.m. Thursday, July 25. By fishing waters southeast of Shelter Cove, good quality pink salmon could be harvested without jeopardizing those fish already staging on the flats at the head end of Port Dick. The pink catch for the opening day exceeded 15,000 fish.

An aerial survey on July 26 in conjunction with commercial spotter pilot reports confirmed significant numbers of fish in saltwater at both South Nuka Island and Windy Bay. Up to 15,000 pinks were estimated at South Nuka while 25,000 - 30,000 pinks were estimated near the head of Windy Bay. Another survey the following day indicated that fish numbers continued to build in both locations.

The Windy Bay and Nuka Island Subdistricts were subsequently opened to seining July 30 on the regular schedule of two 48-hour fishing periods each week. Waters of Tonsina Bay west of 150°53'30" W. longitude remained closed.

Catches at South Nuka on July 30 (opening day) totalled 10,600 pinks from five landings. These proved to be the only deliveries of the season from this subdistrict. Meanwhile, catches in the South Section of Port Dick Subdistrict remained fairly steady since the July 25 opening with an average daily catch of approximately 14,000 pinks. With pink salmon run strength continuing to build throughout the Outer District, waters of the South Section of Port Dick Subdistrict from a marker near the outlet of Port Dick Lake Creek to a line extending from the waterfall at approximately 151° 05'55" W. longitude to the south shore at 59°15'20" N. latitude were opened to seining seven days per week effective Saturday, August 3. Waters of Windy Bay and Port Chatham Subdistricts were also opened to fishing seven days per week on the same day. Between July 30 and August 8 Windy Bay Subdistrict produced a catch of 49,000 pinks, while only about 7,500 pinks were taken from Port Chatham before the fleet abandoned the area for the season.

An aerial survey on Tuesday August 6 indicated that Port Dick pink runs continued to gain strength, with 41,000 fish estimated on the saltwater flats at the head of the bay. A ground survey of Port Dick Creek on August 5 revealed an escapement of approximately 4,500 chums and 15,000 pinks. In response, <u>all</u> waters of the Port Dick Subdistrict with the exception of the North Section, were opened to seining seven days per week effective August 7. The North Section remained closed to allow an estimated 12,000 chums staging near the mouth of Island Creek to escape the fishery. By August 15 most these fish had moved into the creek and fishing was allowed seven days per week throughout the entire Port Dick Subdistrict.

Effective Saturday, August 10 waters of Chugach Bay were also opened to seining seven days per week after a survey indicated 3,500 pinks in the creek with nearly 14,000 pinks in the bay. Fishing was allowed west of a line originating at a point on the north shore of Chugach Bay approximately 1.5 statute miles east of the mouth of Badger Cove. Only one delivery was made from Chugach Bay this season when 2,775 pinks were landed on August 10.

Table 5 provides catch and escapement estimates of pink salmon for each of the subdistricts in the Outer District, while Appendix Table 18 compares the 1991 catch with the historical averages. The 1991 pink salmon harvest in the Outer District of 359,664 fish exceeded the 1981-90 average by (7%) 23,000 fish, but was nearly equal to the long-term 1971-90 average. Appendix Table 19 shows pink salmon catches during high cycle (odd-numbered) years since 1959.

Chum Salmon

No openings were allowed to specifically target chum salmon in the Outer District in 1991. Only 14,000 chums were harvested throughout the season and virtually all of these fish were taken in the Port Dick Subdistrict (Table 6). Approximately 3,800 chums were caught in the North Section between August 15-19 when fishing was directed toward pink salmon returning to Island Creek. The final chum salmon escapement estimate in Island Creek totalled 17,300 fish, slightly exceeding the goal of 15,000 fish. Appendix Table 25 compares 1991 chum salmon escapements with historical averages for major spawning systems in Lower Cook Inlet.

Eastern District

Sockeye Salmon

At the present time the only harvestable sockeye salmon return in the Eastern District is located in Aialik Bay. Spawning occurs in the small shallow lake associated with the creek draining the Addison Glacier. The current escapement goal for Aialik Lake is 2,500 - 5,000 sockeyes.

A survey of Aialik Lake on June 28 revealed less than 50 fish, although several jumpers were noted in the saltwater entrance lagoon, also known as Pederson Lagoon. Schools of fish observed in the lagoon could not be positively identified or enumerated because of the glacial water turbidity. The Aialik Subdistrict was opened to seining on the regular schedule of two 48-hour periods each week beginning July 1, but the lagoon remained closed. By July 3 surveys indicated approximately 1,500 sockeyes were present in the lake with an additional unknown quantity in the lagoon. Therefore, waters of Aialik Lagoon were opened to fishing for a two-hour period on Saturday July 6. The five boats present for the opening agreed to a cooperative harvest which resulted in a catch of 3,275 sockeyes.

Escapement rates were slow and no further lagoon openings were allowed until an aerial survey on July 22 revealed 2,800 sockeye in Aialik Lake with additional fish in the creek and lagoon. Beginning July 24 waters of Aialik Subdistrict, including the lagoon, were opened to fishing seven days per week and another 1,000 fish were landed that day. Although the subdistrict and the lagoon remained open for the duration of the season, only about 700 sockeyes were caught outside of the two lagoon openings. The total harvest of 4,700 fish was only about half of the long-term average (Appendix Table 13).

Pink and Chum Salmon

No specific openings were allowed for pink or chum salmon in the Eastern District in 1991. However, beginning the first week in August, the fleet began catching significant numbers of pinks in the southeastern end of the Aialik Subdistrict near Three Hole Bay and Cliff Bay. With catches ranging from 4,500 to 32,000 fish per day, it became immediately apparent that local stocks were not capable of supporting this level of harvest. Because Prince William Sound was experiencing a near record return of pinks, the staff theorized that the fish being caught in Aialik Subdistrict were of Prince William Sound origin although there was no tagging information to provide conclusive evidence. Nevertheless, the theory was largely confirmed by fishermen who reported the migration patterns of the fish being caught in Aialik.

Normally staff knowledge of direct interception of stocks bound for another area would have resulted in a closure in accordance with the Department's mixed stock harvest policy. However at the time, significant numbers of fish being caught in Prince William Sound were being discarded at sea due to lack of markets. The fishery in Aialik was therefore allowed to continue resulting in a harvest of 167,250 pink salmon, setting a new record for the Eastern District (Appendix Table 18). The highest previous catch was made in 1980 when 156,000 pinks were landed, although these fish were Lower Cook Inlet stocks taken in Resurrection Bay.

SUBSISTENCE AND PERSONAL USE FISHERIES

Kachemak Bay Personal Use Fishery

The Southern District (Kachemak Bay) fall coho salmon gillnet fishery dates back prior to statehood under varying names, most recently being known as a "personal use" fishery. The target

species has been coho salmon, with returning fish a mixture of natural stocks bound primarily for the Fox River drainage at the head of Kachemak Bay and adult returns to enhancement sites at Caribou Lake and the Homer Spit. Due to the absence of suitable spawning habitat at both sites, all adult fish resulting from the fry stocking projects are intended for harvest and have contributed significantly to the gillnet fishery. Catches have been allowed to exceed the published guideline level in recent years to permit the harvest of these additional fish.

When the Alaska Board of Fisheries considered this fishery during their 1990 deliberations, members expressed concern for the potential to overharvest natural components of the returns. Therefore, several important changes were enacted. First and foremost, the Board labelled the Southern District fishery as "subsistence" based on the "customary and traditional" criteria they had earlier established in other areas, thus giving the fishery a priority over sport, commercial, and personal use groups. After reviewing historical catches in the fishery, the Board directed the Department to manage for a guideline harvest level. The harvest range of 2,500 to 3,500 coho salmon for the entire fishery was an amount they felt significant for participants yet conservative enough to provide adequate protection to natural runs. Finally, the Board directed the Department to close a portion of upper Kachemak Bay to salmon fishing by all user groups coincidentally with the achievement of the guideline harvest level and closure of the gillnet fishery.

Most regulations governing the fishery remained unchanged from previous years. The regulatory opening date was August 16. Legal gear was limited to single set gillnets not exceeding 35 fathoms in length, 45 meshes in depth, and 6 inches in mesh size. A permit from the Homer office was required, with seasonal limits set at 25 salmon per head of household and 10 additional salmon per each dependent. Scheduled weekly fishing periods were from Monday 6:00

a.m. until Wednesday 6:00 a.m. and Thursday 6:00 a.m. until Saturday 6:00 a.m.

On August 9, just one week before the August 16 regulatory opening of the gillnet fishery, Alaska Superior Court Judge Charles Cranston of Kenai ruled that the regulations establishing and governing the Cook Inlet subsistence fisheries were invalid and that therefore the Southern District fishery should not open. The Department responded by drafting an Emergency Regulation re-establishing the personal use regulations previously governing the Southern District fishery. Board of Fisheries members polled by Commissioner Rosier indicated it was their intent and desire that this fishery proceed despite the court ruling, so the Emergency Regulation was signed by the Commissioner, but not in time for the regulatory opening. The fishery therefore opened as a personal use fishery on the next regularly scheduled weekly fishing period at 6:00 a.m. Monday, August 19. All other regulations remained the same, except that upper Kachemak Bay would not close to all salmon fishing when the gillnet fishery closed since it was no longer a subsistence fishery and therefore had no priority.

Prior to the opening, the Department requested voluntary daily reporting from each permit holder. Based on those voluntary reports through the first 48-hour fishing period and the fishery performance from the previous three years, the staff estimated that the upper level of the guideline harvest range would be reached sometime on Friday, August 23. In order to make the closure logistically practical for all participants, a closure time of 9:00 p.m. August 23 was announced to take advantage of a low tide occurring at 8:30 p.m. Total fishing time allowed was 87 hours.

A total of 472 permits was issued for the 1991 fishery, with 459 permit holders (97%) returning their permits. Of the total, 295 permit holders (63%) actively fished, 162 (34%) did not fish at all, and the remaining 13 permits holders (3%) did not report or

return their permits. Based on actual permit returns, total harvest was estimated to be 4,931 coho salmon, 366 pink salmon, 47 sockeye salmon, 23 chums, and 8 chinook (Appendix Table 26).

The 1991 Southern District personal use gillnet fishery was the shortest on record due to the implementation of the guideline harvest range. The late-breaking court ruling and timing of the Department's reaction to it resulted in some confusion for participants, particularly with regard to the delayed opening. A very few people complained about the short duration of the fishery and the effect it had on their overall catches. The staff made a concerted effort prior to the opening to inform the public of the new status of the fishery and to make them aware of the anticipated short duration of the fishery. Prior knowledge of the brevity of the fishery led to intense competition for desirable fishing sites and even prompted some individuals to locate their nets completely offshore.

Both the number of permits issued and the actual effort decreased from 1990 levels but were similar to those of 1988 and 1989 (Appendix Table 26). Several factors contributed to the coho catch exceeding the 2,500 to 3,500 guideline harvest level directed by the management plan. The staff relied on voluntary daily catch reports from participants, and although many permit holders made exceptional efforts to provide prompt and accurate information, the utility of such information for inseason management decisions is limited. Compounding the problem of restricting the catch was a strong coho run as evidenced by staff and reported observations of the enhanced returns to the Homer Spit and Fox Creek, and an aerial survey of Clearwater Slough, which can sometimes be used as a rough index of the natural return to Fox River. Based on the strength of the escapement into Fox River and the significant contribution of enhanced fish to the gillnet harvests, no "overharvest" of the natural segment of the coho stocks in Kachemak Bay occurred as a result of surpassing the guideline harvest level.

A number of fishermen reported Dungeness crab incidentally caught in their nets, with heaviest catches occurring in the Mud Bay area. Crab mortality estimates by fishermen varied greatly, but it is unclear how these reports and estimates of mortality compare with previous years as no documentation exists.

Some uncertainty exists at this time concerning the way in which the fishery will be legally allowed in 1992. The Emergency Regulation governing the 1991 fishery has expired and the subsistence regulations adopted by the Board in 1990 are apparently no longer in place due to the Superior Court ruling. Department staff are currently researching the mechanics necessary to allow a fishery during 1992, while a staff proposal re-establishing personal use regulations will be submitted to the Board for consideration at their October 1992 meeting in Soldotna. The fishery itself in 1992 is expected to be very similar to the 1991 fishery. Participation will undoubtedly be high but could be affected by other alternative personal use fisheries elsewhere in Cook Inlet. Based on experience gained during the 1991 fishery, it should be possible to keep the coho harvest within the guideline range.

English Bay - Port Graham Subsistence

Subsistence fishing in Lower Cook Inlet during 1991 was still confined by regulation to the Port Graham and English Bay areas. Poor returns of sockeye salmon to the English Bay Lake system during the previous six years had prompted serious concerns for the health of this stock. In an attempt to increase the spawning escapement and to provide brood stock for a FRED Division rehabilitation project, a total closure of the Port Graham and English Bay areas to commercial, sport, and subsistence gillnet fishing was invoked from June 1 - July 11. The area was re-opened to subsistence fishing on July 13 after the bulk of the sockeyes had returned. The closure resulted in a peak aerial escapement

estimate of 7,000 fish on July 9, the highest total since 1987 and nearly equal to the long term average of 7,500 fish (Appendix Table 23).

Closure of the subsistence fishery during the sockeye run had little effect on overall fishing success. Although catches of sockeye salmon were below average for residents of both villages, harvests of chinook, pink, and chum were above average for residents of Port Graham while catches of coho, pink, and chum were above average for residents of English Bay. Set gillnet catches totalled 7,440 fish, the highest combined total in the past decade, with 61% of the harvest comprised of pink salmon and 25% coho salmon (Appendix Tables 28 and 29).

ENHANCEMENT AND REHABILITATION

Introduction

Fisheries enhancement has played a major role in LCI salmon production during recent years. Natural adult salmon returns to the LCI area continue to demonstrate wide fluctuations, often the result of flooding or ice scouring in the spawning streams and rivers. Since their inception in the mid-1970's, enhancement and rehabilitation projects have made significant contributions to commercial as well as sport fishing harvests. These contributions have historically ranged from 24-90% of the entire LCI commercial salmon harvest and are expected to remain high in future years.

FRED Division and CIAA projects provided 36% (425,290 salmon) of the total 1991 LCI commercial harvest of 1,191,354 fish. The Leisure/Hazel, Chenik, Port Dick, and Kirschner Lakes sockeye salmon enhancement projects produced approximately 71% (224,600) of the total LCI harvest of 317,947 sockeyes in 1991. Tutka Lagoon Hatchery production, along with the FRED/CISA cooperative rearing

project at Halibut Cove Lagoon, accounted for 25% (205,000 fish) of the 1991 LCI commercial pink salmon harvest of 828,709 fish.

Using the average weights per fish and average prices per pound in Lower Cook Inlet, the contribution of FRED/CIAA-produced salmon accounted for approximately 58% ($862,086) of the $1.5 million value of the 1991 LCI commercial salmon harvest. A brief description of the current enhancement projects in LCI follows.

Tutka Lagoon Hatchery

The Tutka Lagoon Salmon Hatchery/Rearing Facility was constructed in 1976 with an initial production capacity of 10 million salmon eggs, but has been expanded to a current capacity of 50 million eggs. Pink salmon have been the primary species produced at the hatchery, with some secondary effort directed at chums. Work has recently been initiated on the feasibility of sockeye production at Tutka Hatchery.

In 1991 the Tutka Lagoon Hatchery experienced its fourth lowest return in the facility's 14-year history, accounting for approximately 327,400 fish returning to the hatchery and it's various release sites (Table 9). This yielded slightly over a 1% overall survival rate, the third lowest in the facility's history. The reasons for the poor pink salmon returns to the enhancement sites are not clear at this time. However, very weak pink salmon returns were evident in several systems in the Southern District as well as the Kodiak management area during 1991.

The commercial harvest, including cost recovery, of 114,241 pink salmon from Tutka Bay and Lagoon (Table 9) accounted for approximately 45% of the Southern District and 14% of the entire LCI commercial pink salmon harvest.

Leisure and Hazel Lakes Sockeye Salmon Stocking

Leisure Lake, also called China Poot Lake, historically was a system barren of sockeye salmon. A study initiated in 1976 involved the stocking of hatchery produced sockeye salmon fry to determine optimum stocking levels prior to and after lake enrichment through fertilization. Because a barrier falls below the lake prevents upstream migration, and therefore precludes any adult spawning, it is desirable to harvest all returning adult fish in the terminal harvest area. Since the initiation of this project, over 600,000 adult sockeye have returned as a result of the stocking program and have made a significant contribution to the commercial sockeye harvests in the Southern District (Appendix Table 15). A similar sockeye stocking program was initiated in Hazel Lake, located approximately three miles south of Leisure Lake, beginning in 1988.

Because of the close proximity of the two terminal harvest areas, and the absence of a mark/recovery program, the adult returns to Leisure and Hazel Lakes cannot be separated within the commercial catches and are therefore presented as a combined total. The total combined sockeye returns to Leisure and Hazel Lakes in 1991 was estimated to be 122,000 fish (Figure 9). The cumulative commercial harvest of 117,000 fish (Appendix Table 15) comprised 69% of the Southern District and 37% of the total LCI sockeye salmon harvest.

Approximately 2.0 million sockeye salmon fry were released into Leisure Lake in 1991, the eighth consecutive year of high-density stocking, while an additional 1.3 million fry were released into Hazel Lake (Appendix Table 30). The fry for both projects originated from Glacier Flat (Tustumena Lake) brood stock.

Halibut Cove Lagoon Salmon Enhancement

Pink Salmon

Pink salmon enhancement at Halibut Cove Lagoon was initiated several years ago as a cooperative program with the Cook Inlet Seiners Association, Cook Inlet Aquaculture Association, and ADF&G. Pink salmon fry are transported from Tutka Hatchery to Halibut Cove Lagoon where they are held in floating net pens and fed for 30 days before release. The goal of this project is to disperse fry releases from the Tutka Hatchery over more underutilized rearing areas. It also serves to disperse the commercial seine fleet over larger areas.

The return from last year's release of six million pink salmon fry was estimated at 90,754 fish (Table 9), representing a survival rate of approximately 1.5%. Previous tagging studies have shown that an additional 15% of the fry released from Halibut Cove may have imprinted and returned to Tutka Creek, the original parent stream. The reasons for this year's poor pink salmon survival are currently unknown, but the 1991 return was very disappointing considering the 10% ocean survival rate exhibited by the 1989 pink salmon return to Halibut Cove.

Chinook Salmon

The chinook salmon enhancement project at Halibut Cove Lagoon involves the release of chinook salmon smolts with the objective of increasing sport fishing opportunities in Kachemak Bay. This is the oldest and one of the most popular sport fishing enhancement projects in LCI. Nearly 2,700 adult chinook salmon returned to Halibut Cove Lagoon in 1991.

Although adult returns from the Halibut Cove Lagoon stocking program are not intended for commercial harvest, there is

incidental harvest of these chinook salmon in the commercial fishery, creating concern for all user groups. In 1991 the incidental harvest by commercial fishermen was estimated at 420 fish, or 15.7% of the total return. This was lower than the previous three years and only about half the long-term average commercial catch rate for Halibut Cove Lagoon bound chinooks. The bulk of the incidental commercial harvest is by set gillnets operated in the Halibut Cove Subdistrict, accounting for an estimated 280 fish, or about 10% of the run this season. The remaining 140 chinook salmon were harvested very late in the chinook run by the pink salmon seine fishery within Halibut Cove Lagoon. This terminal pink salmon fishery occurs near the end of the chinook return.

It should be noted that many chinook harvested incidentally while seining during the early part of the pink return were voluntarily released by the fishermen. Most of the commercially harvested chinook were only retained at the very end of the chinook salmon run after many sport fishermen had diverted their efforts to other fishing areas and species. These fish, which were mainly small 2-ocean age chinook, would probably not have been harvested by anglers and cannot spawn at Halibut Cove Lagoon due to a lack of suitable spawning habitat.

Chenik Lake Sockeye Salmon Stocking

Chenik Lake, located in Kamishak Bay, was historically an excellent sockeye producer prior to the 1940's when annual runs approached 150,000 fish. Since that time, however, sockeye runs declined dramatically, forcing a complete closure of the Chenik area fishery beginning in 1952. By the mid-70's the annual return to this system was less than 500 fish.

In 1978 FRED Division initiated a program to re-establish the sockeye returns and subsequently increase commercial fishing

opportunities in the Kamishak Bay area. Sockeye fry from Crooked Creek Hatchery have been annually stocked in Chenik Lake since that time, and a fish pass was developed at the intertidal mouth of Chenik Creek, alleviating a partial migrational barrier. Since 1987, lake enrichment has occurred through the application of liquid fertilizer, but not on an annual basis.

Increased escapements in the early 1980's enhanced subsequent production, and the Chenik area was re-opened to commercial fishing. Recent returns have produced nearly 50% of the total Lower Cook Inlet commercial sockeye harvest, approaching the historical record high runs of the 1930's.

The 1991 commercial harvest of Chenik Lake sockeye salmon totalled 60,397 fish (Figure 10, Appendix Table 16) which was 19% of the entire LCI sockeye harvest. Adult escapement was enumerated through the use of a counting weir at the lake outlet and totalled 10,189 fish.

English Bay Sockeye Salmon Rehabilitation

The English Bay Lake system has the only significant natural run of sockeye salmon in the Southern District of Lower Cook Inlet. Unfortunately, the English Bay sockeye returns have declined in recent years to their lowest recorded levels. Sockeye escapements since 1985 have ranged from 2,500 to 7,000 fish, well below the 30-year average of 7,500 fish. Optimum escapement for this system is estimated at 15,000-20,000 fish.

The recent declining trend in the English Bay sockeye run has resulted in a very restrictive management strategy for this area. The commercial, sport, and subsistence fisheries have been closed for most of the last several seasons. Efforts to rehabilitate the depressed sockeye salmon stock at the English Bay Lakes system were initiated with an egg take in 1989. The first stocking of sockeye

salmon fry took place in 1990 with the release of 350,000 fry, while an additional 241,000 fry were released during 1991 (Appendix Table 30).

Bear Lake Sockeye Salmon Enhancement

Bear Lake, located at the head of Resurrection Bay in the Eastern District, has received intensive sockeye salmon enhancement efforts over recent years. This system has been the centerpiece of a Division of Sport Fish coho salmon enhancement program since 1962, part of which included limiting escapement of sockeye salmon into the lake. As a result, only a small remnant run of naturally occurring sockeye salmon remained at Bear Lake. In an effort to produce increasing numbers of adult sockeyes without adversely affecting coho salmon production, as mandated by Board of Fisheries policy, CIAA undertook a sockeye stocking program beginning in 1989 with the release of 2.2 million sockeye fingerlings. Since then, additional releases of both fingerlings and "zero check" smolts have occurred, totalling 2.2 million fingerling and 159,000 smolt in 1990 and 1.5 million fingerling and 75,000 smolt in 1991 (Appendix Table 30).

Other Sockeye Salmon Lake Stocking

Several other LCI lakes were stocked in 1991 with sockeye salmon fry produced by Crooked Creek Hatchery. A total of four different lakes, evaluated through pre-stocking studies conducted between 1986 and 1989, were stocked with 1.25 million sockeye fry during 1991 (Appendix Table 30). The four lakes included Kirschner Lake, Bruin Lake, Upper Paint Lake, and Lower Paint Lake, all in the Kamishak District. Sockeye salmon fry releases into Port Dick Lake in the Outer District were discontinued after 1989 due to low plankton population levels observed there that year.

The second year of adult sockeye returns to Kirschner and Port Dick Lakes occurred in 1991. Nearly 5,000 sockeye salmon were harvested from Port Dick while almost 56,000 fish, primarily returning to Kirschner Lake, were landed in the Bruin Bay Subdistrict. Although the Port Dick return was considerably under forecast, the Kirschner return was nearly twice the forecasted level. It was encouraging to note that smolt mortality rates through the extensive waterfall outlets may not be as high as initially expected.

Paint River Fish Pass

The Paint River system in the Kamishak Bay District contains at least 40 kilometers (25 miles) of potential salmonid spawning and rearing habitat for an estimated 1,600,000 sockeye, pink and chum salmon. The Paint River system is currently barren of salmon because of an impassible waterfall at tide line. FRED Division and CIAA initiated feasibility studies for a fishway in 1979. CIAA received State and Federal grant funds to build the fishway, completing construction in the fall of 1991. The Paint River lake system has been stocked with sockeye fry in 1986 and annually since 1988 to test the feasibility of developing a sockeye salmon return to the fish pass project site. A total of 0.75 million sockeye salmon fry were released into the two Paint Lakes via air drop in 1991 (Appendix Table 30). Only 700 adult sockeyes were observed returning to the Paint River during 1991, and because the fish pass was under construction and not yet complete, no freshwater escapement occurred.

Projected Returns from Enhancement Projects in 1992

Adult sockeye salmon returns to enhancement sites could approach 375,000 fish in 1992 as a result of the continuing lake stocking projects in Lower Cook Inlet. Beneficial results of Leisure Lake fertilization should again be evident in the 1992 sockeye returns. Based on emigration estimates from annual releases of 2 million

fry, approximately 100,000 sockeye salmon are projected to return to China Poot Bay in 1992. An additional 50,000 sockeyes are expected to return to Neptune Bay as a result of fry releases into Hazel Lake.

The 1992 sockeye salmon return to Chenik Lake is forecasted at 125,000 fish based on return rates at that system in recent years. Escapement levels of the parent brood years for the 1992 return were estimated at 9,000 sockeye in 1988 and 10,000 sockeye in 1987. Additionally, 2.6 million sockeye fry were stocked in Chenik Lake in 1988, and an additional 3.5 million released in 1989.

The Paint River lakes in the Kamishak Area were also stocked in 1989 with 2.0 million sockeye salmon fry from the Crooked Creek Hatchery. Adult returns from this project may approach 30,000 fish in 1992.

The adult sockeye returns to Kirschner Lake have been very encouraging over the past two seasons, leading to a forecast of 40,000 fish in 1992. Previous years' returns to Port Dick have been somewhat disappointing for unknown reasons. The sockeye return to Port Dick in 1992, forecasted at 9,000 fish, should represent the last adult returns to that area since stocking of Port Dick Lake was discontinued beginning in 1990. The first year sockeye return to Bear Lake in 1992 could approach 20,000 fish but is somewhat clouded because of the questionable survival rates of the "zero check" smolt released into that system.

COMMERCIAL HERRING FISHERY

INTRODUCTION

Commercial herring fishing occurs in all fishing districts in Lower Cook Inlet except for the Barren Islands District (Figure 1). Herring fishing began in the Southern District in 1914 as a gillnet fishery in Kachemak Bay. Eight saltries, six near Halibut Cove, were operating during the peak of the fishery. Fishing with purse seines began in 1923, and after three subsequent years with average annual harvests approaching 8,000 short tons (st), herring populations, and the fishery, collapsed.

The next Lower Cook Inlet herring fishery began in 1939 and was centered in the Resurrection Bay and Day Harbor area of the Eastern District. This was a purse seine fishery with the product used exclusively for oil and meal reduction. Peak harvests occurred from 1944-46 averaging 16,000 st each year, and stocks sharply declined thereafter, apparently due to over-exploitation.

Japanese markets for a salted herring roe product resulted in development of a sac roe fishery in the 1960's. Market demand and the relatively high prices paid to fishermen caused rapid expansion of the fishing fleet and harvest. Spotter pilots and fishermen first located and fished the Kamishak Bay herring population in 1973. Following several years of commercial harvests in the late 1970's, a severe decline in Kamishak Bay herring abundance prompted a complete closure beginning in 1980. Kamishak Bay stocks appeared to rebound quickly in response to the closure, and the fishery was re-opened in 1985. Since then the Kamishak Bay District has been regulated to achieve a 10-20% exploitation rate mandated by the Alaska Board of Fisheries. By 1989, fishing efficiency had evolved

to a level where intensive regulatory management was required to ensure maximum value of the harvest while maintaining the guideline harvest level.

1992 SEASON SUMMARY

A total of 1,992 short tons (st) of Pacific herring was harvested in the Kamishak Bay District during 1991 (Tables 10 and 11). The sac roe harvest was 12% less than the 1990 harvest (2,264 st) and continued a declining trend in catches from the peak harvest of 6,132 st in 1987 (Appendix Table 31). Estimated exvessel value of the 1991 harvest to fishermen was $1.3 million (Appendix Table 32).

The number of purse seine vessels participating in 1991 was similar to previous years, reflecting the limited number of permits (78) issued for Lower Cook Inlet. A total of 9 processors/buyers purchased herring this season. Roe recoveries averaged 11.3% for the 1991 commercial sac roe harvest (Table 10).

Poor weather in the Kamishak Bay District precluded comprehensive assessment of the 1991 spawning biomass by aerial surveys, with an estimated 3,665 st of herring actually observed. Because of this, the 1991 forecast biomass was used to establish the harvest quota for the sac roe fishery. By adjusting the 1991 forecast biomass to match the 1991 observed age composition, the final 1991 spawning biomass was estimated to be 18,163 st (Table 11, Figure 13, and Appendix Table 32). A significant recruitment of younger fish (ages 3 and 4) was observed in the samples.

No commercial harvest of sac roe herring occurred in the Southern District as fish were never present in sufficient quantities to justify an opening. The Outer and Eastern Districts were opened to

purse seining for a six-hour period each day from May 10 through May 31. However, there was very little interest by fishermen or processors and no commercial harvest occurred.

COMMERCIAL FISHERY

Kamishak Bay District

Pre-season management strategy called for a guideline harvest level of 1,727 tons based on a 10% exploitation of the previous year's final biomass estimate. The conservative harvest rate was selected because of concern regarding the low abundance of recruit age herring during 1989 and 1990. In contrast to past years when the fishery was opened on a specific date by regulation, management strategy was changed in 1990 so that the fishery would be opened by Emergency Order. This approach was well received by both fishermen and processors and was therefore used again this season. Industry technicians were asked to evaluate test fish samples for roe recovery prior to the opening so that product quality and value would be maximized.

Periodic aerial surveys were planned throughout the spawning season to determine relative abundance and distribution of herring. Data collection methods were to be consistent with those developed and used in 1990 when numbers and distribution of herring schools, location and extent of milt, and visibility factors affecting survey results were recorded on index maps for each survey. Standard conversion factors of 1.52 (water depths of 16 ft or less), 2.56 (water depths between 16 and 26 ft) and 2.83 st/538 sq. ft (water depths greater than 26 ft) were used to convert estimated herring school surface areas to biomass.

The R/V Pandalus travelled to the Kamishak District on April 17 with the management staff aboard. The plan was to initiate aerial

surveys and a volunteer test fish program (utilizing commercial purse seine vessels) immediately, but poor weather delayed both for several days. The first aerial survey of the district (using the ADF&G DeHavilland Beaver from Kodiak) was conducted on April 20 under fair conditions, but no fish were observed. No fish were sighted until April 24 when several small schools were located in the Chenik Reef-Amakdedulia Cove area, and inside Douglas Reef. Survey conditions were marginal and the total biomass was conservatively estimated at 800-1,000 st. The first spawning of the season (approx. 3/4 linear mile) was observed in Amakdedulia Cove. The advance notice period was subsequently reduced to six hours effective at 12:00 midnight on April 24.

Another aerial survey scheduled for the morning of April 25 was cancelled due to poor weather. Although subsequent surveys by the Department and commercial spotter pilots failed to find more fish, two volunteer test boats, using hydroacoustic gear to locate fish, obtained samples from the Chenik Head area on the morning of April 26. These fish showed roe maturities ranging from 9.0-16.5% and averaging 12.2%, providing additional evidence that the biomass was building and spawning was imminent. It was assumed that further delay of the fishery could easily result in reduced roe recoveries due to spawn-outs. Preliminary age composition analysis of the samples showed excellent distribution of age classes dominated by ages 7 and 8, a mean weight of 211 g, and a sex ratio of 51% male/49% female.

With those results, a one-hour standby notice was announced at 12:30 p.m. to become effective at 6:30 p.m. that same evening. The weather gradually improved throughout the day and it appeared that winds and tides would provide a short window of opportunity for a fishery that evening. Having met all management criteria needed to justify an opening, and given the favorable weather conditions at the time, a one-hour fishing period was announced for Management Area 5 only (Figure 6), commencing by field announcement sometime

between 7:25 and 7:35 p.m., April 26. The field announcement on SSB and VHF radio was used to alleviate the possibility of early sets. This style of opening was utilized in Kamishak for the first time in 1990 and was requested again by fishermen and F&WP.

Although approximately 30 commercial spotter aircraft were present during the opening, the water was too turbid to observe herring from the air, and virtually all seining was done without the aid of airplanes. No aerial observations of the fishery were conducted by staff due to the rough seas that made it impossible to fuel the airplane at Nordyke Island. Nevertheless, tender reports and observations from ADF&G sampling crews indicated that the desired harvest level would be achieved, so the fishery was allowed to close as scheduled at 8:30 p.m.

The final catch from one hour of fishing totalled 1,992.2 tons, and roe recoveries averaged 11.25% (Table 10). Since the preseason guideline harvest level was achieved, it was announced at 11:00 p.m. that the Kamishak District was closed for the season.

Aerial surveillance continued periodically from Homer throughout the month of May and into the second week of June in an attempt to document spawning biomass. However, nearly all surveys were plagued by poor weather and turbid water conditions making a comprehensive aerial estimate impossible. Additional fish and spawn were documented in the northern portion of the district, but no real strength was ever observed. Because it was not possible to estimate the actual spawning biomass using aerial surveys, the best available estimate was obtained by adjusting the 1991 forecast biomass to match the 1991 observed age composition. After this adjustment, the 1991 biomass was estimated to be 18,163 st (Table 11).

The age composition of the 1991 commercial catch and escapement biomass was determined from a sample of 1,213 herring scales

obtained from the commercial harvest and test fishing catches prior to the fishery. No samples were obtained after the fishery (in May) when greater numbers of younger fish have historically been observed. Age-7 comprised 42.3% and age-8 19.0% of the samples (Table 11). Other strong observed year classes included ages 5 and 6 fish, comprising a combined 17% of the commercial samples.

Southern District

Management strategy for the Southern District sac roe fishery allows for a limited harvest of 150 to 200 tons for purposes of obtaining age, weight, length and roe recovery information. This fishery was scheduled to occur after the Kamishak District fishery when staff and equipment were no longer needed there. The last harvest in this district occurred in 1989 when 171 tons of herring were harvested by 10 vessels in a single (2.5 hour) opening.

Management attention during the 1991 season was directed to the Southern District on April 30 when the first aerial survey of the area was flown. Only 10 surveys were conducted through May 24 but no real peak in abundance was ever observed by the staff or commercial spotter pilots. Most of the observed herring were located in Mud Bay and Tutka Bay. The total spawning biomass was estimated at less than 1,000 st. A commercial harvest of sac roe herring did not occur in the Southern District in 1991 as fish were never present in sufficient quantities to justify an opening.

Outer and Eastern Districts

Guideline harvest levels allow a limited harvest of 150-200 tons in each of the four management areas established in the Outer and Eastern Districts. There has been very little interest by processors and fishermen in these two districts and the fishery is

viewed as exploratory in nature. Limited harvests from these areas in past years have been predominantly younger age classes (ages 3 and 4) with roe recoveries consistently below 10%.

The two districts were opened to purse seining on May 10 for a six-hour period each day from 8:00 a.m. until 2:00 p.m., until further notice. Fishermen planning to participate were asked to register at the Homer office prior to departure and report their location on a daily basis. Although several boats expressed interest, only four boats and one spotter actually participated. Very few schools were observed and limited sampling from selected schools produced immature ("green") fish or age 1 and 2 juveniles. No commercial harvest occurred in the Outer and Eastern Districts and the fishery was closed at 2:00 p.m. on May 31.

No aerial biomass estimates of the Outer and Eastern Districts were attempted this season. The size of the area and the poor weather in the Gulf of Alaska, which precludes surveys on a regular basis, makes aerial biomass estimation impractical in these two districts.

HERRING OUTLOOK AND MANAGEMENT STRATEGY FOR 1992

The 1992 spawning biomass of herring in Kamishak Bay District is projected to be 16,643 tons or approximately 5% less than the 1991 estimated biomass (Table 11 and Figure 13). The 1992 forecast was based on age specific estimates of (1) the 1990 escapement, (2) 1992 age composition, (3) historical mortality and recruitment trends, and (4) 1991 mean weights. An estimated 71% of the projected biomass will be 7 years or older. The 1983 and 1984 year classes that have supported the fishery in recent years are expected to represent 55% of the biomass by weight.

Best available data indicates a continued decline in herring abundance. Although factors responsible for this decline have yet

to be identified, continuation of this trend dictates a cautious management approach. A 10% exploitation rate was again used to set the 1992 guideline harvest level.

In addition to the spring sac roe fishery in Lower Cook Inlet, a food and bait fishery on Kamishak Bay herring stocks occurs in the Shelikof Straits area of the Kodiak Management Area. This fishery has an allocation not to exceed 2% of the Kamishak Bay herring total biomass as estimated by aerial survey following the spring sac roe fishery.

Based on the 1992 projected return of 16,643 tons, a surplus of approximately 1,664 tons would be available for harvest at the 10% exploitation rate. Harvest allocation in accordance with the current management plan will be as follows:

		Tons
KAMISHAK BAY SAC ROE HARVEST	(9%)	1,479
SHELIKOF STRAITS FOOD & BAIT	(1%)	164
TOTAL ALLOWABLE HARVEST	(10%)	1,643

A very conservative approach will be taken with regard to any harvest of young, newly recruited herring since these fish will provide future spawning stock and contribute to future harvests. No fishery on young (age 3-4) fish will be considered unless this recruit population exceeds 40-50% of the observed biomass.

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Table 1. Commercial salmon catch (including hatchery cost recovery) in numbers of fish by species, district, and gear type, Lower Cook Inlet, 1991.

District	Chinook	Sockeye	Coho	Pink	Chum	Total
Southern						
Set Net	842	20,525	5,011	3,954	1,577	31,909
P. Seine	557	149,699	4,404	250,008	385	405,053
Total Southern	1,399	170,224	9,415	253,962	1,962	436,962
Outer	2	6,408	12	359,664	14,337	380,423
Eastern	1	4,703	7,283[a]	167,250	80	179,317
Kamishak	17	136,612	2,337	47,833	7,853	194,652
LCI Total	1,419	317,947	19,047	828,709	24,232	1,191,354
Percent	0.1	26.7	1.6	69.6	2.0	100.0
1971-90 Average	831	138,080	10,931	920,338	118,614	1,188,794

[a] Includes 331 cohos taken by commercial purse seine, 917 cohos taken during Seward Silver Salmon Derby, and 6,035 cohos taken for private hatchery cost recovery.

Table 2. Commercial catch and escapement of chinook salmon in numbers of fish by subdistrict, Lower Cook Inlet, 1991.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Halibut Cove	392		392
Halibut Cove Lagoon	28		28
China Poot Bay	358		358
Neptune Bay	19		19
Tutka Bay	132		132
Seldovia Bay	350		350
Barabara	120		120
SOUTHERN DISTRICT TOTAL	**1,399**		**1,399**
OUTER DISTRICT			
Windy Bay	1		1
East Nuka (McCarty Fiord)	1		1
OUTER DISTRICT TOTAL	**2**		**2**
EASTERN DISTRICT			
Aialik Bay	1		1
EASTERN DISTRICT TOTAL	**1**		**1**
KAMISHAK DISTRICT			
Kirschner Lake	2		2
Chenik Lake	8		8
McNeil River	6		6
Douglas River	1		1
KAMISHAK DISTRICT TOTAL	**17**		**17**
TOTAL LOWER COOK INLET	**1,419**		**1,419**

[a] Chinook escapement in Lower Cook Inlet is very limited; no escapement surveys are conducted.

Table 3. Commercial catch (including hatchery cost recovery) and escapement of sockeye salmon in numbers of fish by subdistrict, Lower Cook Inlet, 1991.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Halibut Cove	31,286		31,286
Halibut Cove Lagoon	4,726		4,726
China Poot Bay			
Common Property Fishery	88,933		
Hatchery Cost Recovery	7,105		
Total Run			96,038
Neptune Bay	20,692		20,692
Tutka/Kasitsna Bays	7,073		7,073
Seldovia Bay	4,011		4,011
Barabara Creek	6,398		6,398
English Bay		7,000	7,000
SOUTHERN DISTRICT TOTAL	**170,224**	**7,000**	**177,224**
OUTER DISTRICT			
Port Chatham	6		6
Windy Bay	12		12
Port Dick (South Section)	4,561		4,561
Nuka Island	56		56
East Nuka (McCarty Fiord)	1,773		
James Lagoon		1	
Desire Lake		8,200	
Delight Lake		4,075	
Delectable (Ecstacy) Lake		300	
Total Run			14,349
OUTER DISTRICT TOTAL	**6,408**	**12,576**	**18,984**
EASTERN DISTRICT			
Resurrection Bay			
Bear Lake		748	748
Aialik Bay	4,703	3,700	8,403
EASTERN DISTRICT TOTAL	**4,703**	**4,448**	**9,151**

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Table 3. (page 2 of 2)

Subdistrict/System	Catch	Escapement[a]	Total Run
KAMISHAK DISTRICT			
Ursus Cove		10	10
Kirschner Lake	42,654		42,654
Bruin Bay	13,234	100	13,334
Chenik Lake			
Common Property Fishery	51,773		
Hatchery Cost Recovery	8,624		
Amakdedori Creek		1,900	
Chenik Creek		10,189[b]	
Total Run			72,486
Paint River	409	291[c]	700
McNeil Cove	12,886		
Mikfik Creek		9,700	
Total Run			22,586
Kamishak/Douglas Reef	775		
Big Kamishak River		650	
Total Run			1,425
Silver Beach	6,257		
Douglas Beach River		75	
Total Run			6,332
KAMISHAK DISTRICT TOTAL	**136,612**	**22,915**	**159,527**
TOTAL LOWER COOK INLET	**317,947**	**46,939**	**364,886**

[a] Peak aerial live counts.
[b] Weir counts.
[c] No freshwater escapement, fish migration prevented by falls.

Table 4. Commercial catch (inlcuding hatchery cost recovery) and escapement of coho salmon in numbers of fish by subdistrict, Lower Cook Inlet, 1991.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Halibut Cove	1,794		1,794
Halibut Cove Lagoon	123		123
China Poot Bay	1,484		1,484
Neptune Bay	1,515		1,515
Tutka Bay	2,508		2,508
Seldovia Bay	105		105
Barabara Creek	1,886		1,886
SOUTHERN DISTRICT TOTAL	**9,415**		**9,415**
OUTER DISTRICT			
Windy Bay	7		7
Port Dick (South Section)	5		5
OUTER DISTRICT TOTAL	**12**		**12**
EASTERN DISTRICT			
Aialik Bay	331		331
Resurrection Bay			
Seward Silver Salmon Derby	917		
Bear Lake	6,035[b]		
Total Run			6,952
EASTERN DISTRICT TOTAL	**7,283**		**7,283**
KAMISHAK DISTRICT			
Kirschner Lake	4		4
Bruin Bay	2		2
Chenik Lake	1		1
Douglas River	2,330		2,330
KAMISHAK DISTRICT TOTAL	**2,337**		**2,337**
TOTAL LOWER COOK INLET	**19,047**		**19,047**

[a] Escapement estimates derived from limited aerial surveys. Numbers represent unexpanded aerial live counts.
[b] Cohos taken for private hatchery cost recovery.

Table 5. Commercial catch (including hatchery cost recovery) and escapement of pink salmon in numbers of fish by subdistrict, Lower Cook Inlet, 1991.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Humpy Creek		17,406	17,406
Halibut Cove	34,932		34,932
Halibut Cove Lagoon	56,163		56,163
China Poot Bay	34,538	2,642	37,180
Neptune Bay	10,475		10,475
Tutka/Kasitsna Bays			
Common Property Fishery	14,691		
Hatchery Cost Recovery	101,837		
Hatchery Broodstock		103,100	
Sadie Cove Creek		1,043	
Tutka Head End Creek		4,666	
Tutka Lagoon Creek		16,820	
Jakolof Bay Creek		2,273	
Total Run			244,430
Barabara Creek	1,061	10,853	11,914
Seldovia Bay	265		
Seldovia River		29,950	
Total Run			30,215
Port Graham River		28,966	28,966
SOUTHERN DISTRICT TOTAL	**253,962**	**217,719**	**471,681**
OUTER DISTRICT			
Dogfish Bay		9,322	9,322
Port Chatham	7,463	23,776	31,239
Chugach Bay	2,775	5,300	8,075
Windy Bay	49,131		
Windy River Left		34,535	
Windy River Right		20,744	
Total Run			104,410
Rocky River		26,100	26,100
Port Dick			
South Section	267,258		
North Section	22,451		
Port Dick-Head End Creek		54,237	
Port Dick-Slide Creek		12	
Port Dick-Middle Creek		1,000	
Port Dick-Island Creek		24,400	
Total Run			369,358
Nuka Island (South)	10,577	16,384	26,961

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Table 5. (page 2 of 2)

Subdistrict/System	Catch	Escapement[a]	Total Run
East Nuka (McCarty Fiord)	9		
James Lagoon		4,400	
Desire Lake		1,300	
Delight Lake		2,300	
Total Run			8,009
OUTER DISTRICT TOTAL	**359,664**	**223,810**	**583,474**
EASTERN DISTRICT			
Aialik Bay	167,250		167,250
Resurrection Bay			
Bear/Salmon Creeks		15,429	
Tonsina Creek		339	
Thumb Cove		3,352	
Total Run			19,120
EASTERN DISTRICT TOTAL	**167,250**	**19,120**	**186,370**
KAMISHAK DISTRICT			
Iniskin Bay			
Sugarloaf Creek		450	450
Cottonwood Bay		12	12
Ursus Cove			
Brown's Peak Creek		16,700	
Ursus Lagoon Creek		500	
Total Run			17,200
Rocky Cove			
Sunday Creek		20,900	20,900
Kirschner Lake	18,281		18,281
Bruin Bay	26,778	74,910	101,688
Chenik Lake	1,768		
Amakdedori Creek		700	
Total Run			2,468
Paint River	355		355
Little Kamishak River		935	935
Silver Beach	651		651
KAMISHAK DISTRICT TOTAL	**47,833**	**115,107**	**162,940**
TOTAL LOWER COOK INLET	**828,709**	**575,756**	**1,404,465**

[a] Escapement estimates in the Southern, Outer, and Eastern Districts derived from periodic ground surveys with stream life factors applied. Kamishak estimates are unexpanded peak aerial live counts.

Table 6. Commercial catch and escapement of chum salmon in numbers of fish by subdistrict, Lower Cook Inlet, 1991.

Subdistrict/System	Catch	Escapement[a]	Total Run
SOUTHERN DISTRICT			
Humpy Creek		112	112
Halibut Cove	63		63
Halibut Cove Lagoon	7		7
China Poot Bay	44		44
Neptune Bay	26		26
Tutka/Kasitsna Bays	816		
Sadie Cove		1	
Tutka Head End Creek		147	
Tutka Lagoon Creek		112	
Jakolof Bay		175	
Total Run			1,251
Seldovia Bay	559		
Seldovia River		517	
Total Run			1,076
Barabara Creek	447		447
Port Graham River		1,064	1,064
SOUTHERN DISTRICT TOTAL	**1,962**	**2,128**	**4,090**
OUTER DISTRICT			
Dogfish Bay		3,108	3,108
Port Chatham	91	1,334	1,425
Windy Bay	519		
Windy River Left		23	
Windy River Right		297	
Total Run			839
Port Dick			
South Section	9,929		
North Section	3,784		
Port Dick-Head End Creek		7,350	
Port Dick-Slide Creek		63	
Port Dick-Middle Creek		2,600	
Port Dick-Island Creek		17,300	
Total Run			41,026
Nuka Island South	11		11
East Nuka (McCarty Fiord)	3		
James Lagoon		1,400	
Total Run			1,403
OUTER DISTRICT TOTAL	**14,337**	**33,475**	**47,812**

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Table 6. (page 2 of 2)

Subdistrict/System	Catch	Escapement[a]	Total Run
EASTERN DISTRICT			
Aialik Bay	80		80
Resurrection Bay			
Tonsina Creek		567	
Thumb Cove		90	
Total Run			657
EASTERN DISTRICT TOTAL	**80**	**657**	**737**
KAMISHAK DISTRICT			
Iniskin Bay			
Iniskin River		8,300	
Sugarloaf Creek		1,800	
Total Run			10,100
Cottonwood Bay	1,031		
Cottonwood Creek		7,700	
Total Run			8,731
Ursus Cove Lagoon Creek		1,330	1,330
Kirschner Lake	2,149		2,149
Bruin Bay	418	5,990	6,408
Chenik Lake	501		501
McNeil River	91	10,000	10,091
Kamishak River/Douglas Reef	702		
Little Kamishak River		8,415	
Strike Creek		2,700	
Big Kamishak River		8,700	
Douglas (Reef) River		700	
Total Run			21,217
Silver Beach	2,957		
Douglas Beach Creek		1,500	
Total Run			4,457
KAMISHAK DISTRICT TOTAL	**7,853**	**50,835**	**58,688**
TOTAL LOWER COOK INLET	**24,232**	**93,395**	**117,627**

[a] Escapement estimates in the Southern, Outer, and Eastern Districts derived from periodic ground surveys with stream life factors applied. Kamishak estimates are unexpanded peak aerial live counts.

Table 7. Exvessel value of the commercial salmon catch in thousands of dollars, by species and gear type, Lower Cook Inlet, 1991[a].

	Chinook	Sockeye	Coho	Pink	Chum	Total
PURSE SEINE						
No. Fish	577	297,422	7,084	824,755	22,655	1,152,493
Pounds	3,867	1,229,965	44,730	2,158,214	170,784	3,607,560
Price/ Pound	1.12	0.83	0.42	0.13	0.27	
Value	4,331	1,026,528	18,787	273,661	45,360	1,368,667
SET GILLNET						
No. Fish	842	20,525	5,011	3,954	1,577	31,909
Pounds	13,535	107,002	31,605	13,933	10,464	176,539
Price/ Pound	1.12	0.83	0.42	0.13	0.27	
Value	15,159	89,304	13,274	1,767	2,779	122,283
TOTAL ALL GEAR						
No. Fish	1,419	317,947	19,047[b]	828,709	24,232	1,191,354
Pounds	17,402	1,336,967	125,322[b]	2,172,147	181,248	3,833,086
Value	19,490	1,115,832	36,343[b]	275,428	48,139	1,495,232

[a] Includes fish taken for hatchery cost recovery.
[b] In addition to set gillnet and purse seine catches, 917 cohos taken during Seward Silver Salmon Derby and 6,035 silvers taken for private hatchery cost recovery.

Table 8. Commercial, subsistence, and personal use emergency orders issued for salmon and herring fisheries in Lower Cook Inlet during 1991.

Number/ Issue Date	Description
2-F-H-001-91 April 26	Opens Management Area 5 of the Kamishak Bay District to herring sac roe seining for approximately one hour starting with an ADF&G field announcement some time between 7:25 and 7:35 p.m., Friday April 26, 1991. Management Area 5 includes those waters south of Amakdedori Creek at 59° 16.7′ N. latitude and west of 153° 37′ W. longitude. The fishery will close at 8:30 p.m.
2-F-H-002-91 May 10	Opens the Outer and Eastern Districts of Lower Cook Inlet to herring sac roe seining for a six-hour period each day, from 8:00 a.m. until 2:00 p.m., beginning Friday, May 10, 1991, until further notice.
2-F-H-03-91 June 3	Closes the Port Graham and English Bay area to commercial set gillnet fishing prior to the scheduled opening date of June 3, 1991.
2-F-H-04-91 June 1	Closes the Port Graham and Koyuktolik (Dogfish) subdistricts to subsistence fishing effective at 6:00 a.m. Saturday, June 1, 1991 until further notice.
2-F-H-05-91 May 31	Closes the Outer and Eastern Districts of Lower Cook Inlet to herring sac roe seining effective at 2:00 p.m. Friday, May 31, 1991.
2-F-H-06-91 June 3	Extends the southern boundary of the area open to commercial set gillnetting in Seldovia Bay from the current location listed in the regulation book at 59° 25′ 30" N. latitude, south approximately 2,000 feet to an unnamed creek at 59° 25′ 11" N. latitude.
2-F-H-07-91 June 13	Closes all waters of the McNeil River and Paint River Subdistricts to commercial salmon fishing effective at 6:00 a.m. Thursday, June 13, 1991 until further notice.

-continued-

Table 8. (page 2 of 9)

Number/ Issue Date	Description
2-F-H-08-91 June 17	Opens all waters of the McNeil River Subdistrict to commercial salmon fishing on two regular 48-hour weekly fishing periods, effective at 6:00 a.m. Monday, June 17, 1991 until further notice.
2-F-H-09-91 June 17	Opens all waters of the East Nuka Subdistrict to commercial salmon fishing on two regular 48-hour weekly fishing periods effective at 6:00 a.m. Monday, June 17, 1991 until further notice.
2-F-H-10-91 June 24	Designates and establishes Special Harvest Areas for the Cook Inlet Aquaculture Association (CIAA) in the Chenik and China Poot Subdistricts of the Lower Cook Inlet management area. The Chenik Lake Special Harvest Area consists of all marine waters of the Chenik Subdistrict north of 59° 12′ 30" N. latitude, south of 59° 14′ 30" N. latitude, and west of 154° 00′ 00" W. longitude. The China Poot Bay Special Harvest Area consists of all marine waters of the China Poot Subdistrict east of a line connecting 59° 34′00" N. latitude, 151° 17′ 30" W. lnogitude, and 59° 33′ 30" N. latitude, 151° 17′ 32" W. longitude. During periods established by emergency order, CIAA may harvest a portion of the sockeye salmon returning to these two areas for recovery of operational costs expended towards sockeye salmon enhancement programs in Lower Cook Inlet.
2-F-H-11-91 June 24	Opens the following areas within the Southern District to salmon seining five days per week effective 6:00 a.m. Monday, June 24, 1991, until further notice: China Poot Bay, Tutka Bay and Halibut Cove Subdistricts. The markers at the HEA powerline in China Poot Bay will not be in effect and fishing will be allowed up to the ADF&G regulatory markers a the mouth of China Poot Creek. Halibut Cove Lagoon will open to commercial salmon seining five days per week effective 6:00 a.m. Friday July 5, 1991.

-continued-

Table 8. (page 3 of 9)

Number/ Issue Date	Description
	In addition this emergency order closes the Chenik Lake Special Harvest Area to the common property fishery and opens it to the harvest of salmon seven days per week by authorized agents of Cook Inlet Aquaculture Association (CIAA) effective at 6:00 a.m. Monday, June 24, 1991, until further notice. The remainder of the Chenik Subdistrict and the Bruin Bay Subdistrict will be open to salmon seining five days per week, until further notice. The markers in Chenik Lagoon have been covered and seining will be allowed up to the stream mouth. In addition, this emergency order opens the China Poot Special Harvest Area to the harvest of salmon by authorized agents of CIAA for two 12-hour periods from 6:00 p.m. Sunday, June 30, until 6:00 a.m. Monday July 1, 1991, and from 6:00 p.m. Sunday, July 7 until 6:00 a.m. Monday, July 8, 1991.
2-F-H-12-91 June 24	Closes those waters of China Poot Bay east of a line defined by ADF&G regulatory markers at approximately 151° 14′ 05" W. longitude, 59° 33′ 05" N. latitude and 151° 14′ 01" W. longitude, 59° 33′ 07" N. latitude to commercial salmon seining effective 6:00 a.m. Monday June 24, 1991 until further notice. The closed waters will provide a temporary sanctuary for juvenile Dungeness crab within the China Poot Subdistrict of the Southern District salmon management area.
2-F-H-13-91 July 1	Opens all waters of the Aialik Bay Subdistrict to commercial salmon fishing on two regular 48-hour weekly fishing periods effective at 6:00 a.m. Monday, July 1, 1991 until further notice. Aialik Lagoon will remain closed.

-continued-

Table 8. (page 4 of 9)

Number/ Issue Date	Description
2-F-H-14-91 July 3	Re-opens the Chenik Lake Special Harvest Area to the taking of salmon by the commercial purse seine fleet five days per week from Monday at 6:00 a.m. until Saturday at 6:00 a.m. effective at 6:00 p.m. Wednesday, July 3, 1991, until further notice. The markers in Chenik Lagoon have been covered and seining is allowed up to the stream mouth.
2-F-H-15-91 July 5	Designates and establishes a temporary Special Harvest Area for the Cook Inlet Aquaculture Association (CIAA) in the Tutka Bay Subdistrict within the Southern District of Lower Cook Inlet. The Tutka Bay Special Harvest Area (SHA) consists of all marine waters of the Tutka Bay Subdistrict southeast of the Homer Electric Association powerline crossing, including Tutka Bay Lagoon. The Tutka Bay Special Harvest Area will be open to the capture and sale of salmon by authorized agents of CIAA effective at 6:00 a.m. Friday July 5, 1991, until further notice. Revenue obtained from the sale of these fish will be used for recovery of operational costs associated with the Tutka Lagoon Hatchery salmon enhancement programs in Lower Cook Inlet. The commercial purse seine fishery in the Tutka Bay Subdistrict will be restricted to those waters outside of Tutka Bay proper. Waters of Tutka Bay inside of a line extending from the "rock quarry" on the north side of the bay at approximately 151° 28′ 14" W. longitude, 59° 30′ 14" N. latitude, to the Tutka Bay Lodge on the south side of the bay at approximately 151° 28′ 55" W. longitude, 59° 28′ 31" N. latitude, will be closed after 6:00 a.m. Friday, July 5, until further notice.
2-F-H-16-91 July 5	Closes the McNeil, Kamishak and Douglas River Subdistricts to commercial salmon fishing effective at 6:00 a.m. Monday, July 8, 1991, until further notice.

-continued-

Number/ Issue Date	Description
	Closes the East Nuka Subdistrict to commercial salmon fishing effective at 6:00 a.m. Monday, July 8, 1991, until further notice. Opens Aialik Lagoon to commercial salmon fishing for a two-hour period from 2:00 p.m. until 4:00 p.m. Saturday, July 6, 1991.
2-F-H-17-91 July 8	Amends the weekly fishing schedule in the Halibut Cove Subdistrict for set gillnets. Effective at 6:00 p.m. Thursday July 8, 1991, salmon may be taken by set gillnet in the Halibut Cove Subdistrict five days per week from 6:00 a.m. Monday until 6:00 a.m. Saturday, until further notice.
2-F-H-18-91 July 11	Re-opens the Port Graham Subdistrict to subsistence salmon fishing effective 6:00 a.m. Thursday, July 11, 1991, until further notice.
2-F-H-19-91 July 11	Closes those waters of China Poot Bay Subdistrict in the Southern District to commercial salmon seining northeast of a line between the Homer Spit and the ADF&G regulatory marker on the east side of Neptune Bay at approximately 151° 21′ 09" W. longitude, 59° 33′ 02" N. latitude, for a four-day period effective at 6:00 a.m. Thursday, July 11, 1991, until 6:00 a.m. Monday, July 15, 1991, then re-opens waters of China Poot Bay Subdistrict to commercial fishing on a five day per week basis. Allows authorized agents of Cook Inlet Aquaculture Association to harvest salmon in the China Poot Bay Special Harvest Area by purse seine for a four-day period effective from 6:00 a.m. Thursday, July 11, 1991, until 6:00 a.m. Monday, July 15, 1991.
2-F-H-20-91 July 15	Closes the Chenik Subdistrict to commercial salmon fishing effective at 6:00 a.m. Monday, July 15, until further notice.

-continued-

Table 8. (page 6 of 9)

Number/ Issue Date	Description
2-F-H-21-91 July 14	Opens only those waters of East Nuka Subdistrict in the Outer District within a two-mile radius of Desire Lake Creek to commercial salmon fishing on two regular 48-hour fishing periods per week effective at 6:00 a.m. Monday, July 15, until further notice.
2-F-H-22-91 July 17	Allows authorized agents of Cook Inlet Aquaculture Association to harvest salmon in the China Poot Bay Special Harvest Area by purse seine for a two-day period from 6:00 a.m. Saturday, July 20, 1991, until 6:00 a.m. Monday, July 22, 1991.
2-F-H-23-91 July 19	Opens waters of the South Section of the Port Dick Subdistrict between the ADF&G regulatory marker at the mouth of Port Dick Lake Creek and a marker on the west side of Shelter Cove at approximately 151° 15′ W. longitude, to commercial salmon fishing for a two-hour period from 12:00 noon until 2:00 p.m. effective Monday, July 22, 1991.
2-F-H-24-91 July 22	Opens waters of Aialik Subdistrict, including Aialik Lagoon, in the Eastern District to commercial salmon fishing effective at 4:00 p.m. Wednesday, July 24, on a seven day per week basis until further notice.
2-F-H-25-91 July 23	Opens those waters of the South Section of the Port Dick Subdistrict in the Outer District between a line extending from the waterfall at approximately 151° 05′ 55" W. longitude to the south shore at approximately 59° 15′ 20" N. latitude, and an ADF&G regulatory marker on the west side of Shelter Cove at approximately 151° 15′ W. longitude, to commercial salmon seining, effective at 6:00 a.m. Thursday, July 25, on two regular 48-hour weekly fishing periods, until further notice.

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Table 8. (page 7 of 9)

Number/ Issue Date	Description
	Opens those waters of the South Section of the Port Dick Subdistrict in the Outer District between an ADF&G regulatory marker on the west side of Shelter Cove to an ADF&G regulatory marker near the outlet of Port Dick Lake Creek to commercial salmon seining for a two-hour period from 2:00 p.m. until 4:00 p.m. Thursday, July 25, 1991.
2-F-H-26-91 July 24	Opens Chenik Subdistrict in the Kamishak District to commercial salmon fishing effective at 6:00 a.m. Thursday, July 25, 1991, on a five day per week basis, until further notice.
2-F-H-27-91 July 28	Opens waters of Windy Bay and Nuka Island Subdistricts in the Outer District, with the exception of those waters of Tonsina Bay west of 151° 53′ 30" W. longitude, to commercial salmon fishing on two regular 48-hour weekly fishing periods effective at 6:00 a.m. Tuesday, July 30, 1991, until further notice.
2-F-H-28-91 August 2	Opens those waters of the South Section of Port Dick Subdistrict from a regulatory marker near the outlet of Port Dick Lake Creek to a line extending from the waterfall at approximately 151° 05′ 55" W. longitude, to the south shore at 59° 15′ 20" N. latitude, to commercial salmon fishing seven days per week effective at 6:00 a.m. Saturday, August 3, 1991, until further notice. Opens waters of Windy Bay Subdistrict to commercial salmon fishing seven days per week effective at 6:00 a.m. Saturday, August 2, 1991, until further notice. Opens waters of Port Chatham Subdistrict to commercial salmon fishing seven days per week effective at 6:00 a.m. Saturday, August 2, 1991, until further notice.

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Table 8. (page 8 of 9)

Number/ Issue Date	Description
	Closes those waters of China Poot Subdistrict east of the longitude of Kachemak Bay Wilderness Lodge at approximately 151° 18′ 15" W. longitude to commercial salmon fishing effective at 6:00 a.m. Monday, August 5, 1991, until further notice. Waters of China Poot Subdistrict west of this longitude remain open to salmon fishing five days per week.
	Closes Halibut Cove Subdistrict, with the exception of Halibut Cove Lagoon, to commercial salmon seining effective at 6:00 a.m. Monday, August 5, 1991, until further notice. Waters of Halibut Cove Lagoon remain open to salmon seining five days per week.
	Opens waters of Tutka Subdistrict to commercial salmon seining five days per week effective at 6:00 a.m. Monday, August 5, 1991, until further notice.
2-F-H-29-91 August 6	Opens waters of Port Dick Subdistrict in the Outer District, with the exception of the North Section, to commercial salmon fishing seven days per week, effective at 6:00 a.m. Wednesday, August 7, 1991, until further notice.
	Opens waters of Kamishak and Douglas River Subdistricts in the Kamishak Bay District to commercial salmon fishing five days per week effective at 6:00 a.m. Monday, August 12, 1991, until further notice.
2-F-H-30-91 August 9	Opens waters of Chugach Bay in the Outer District west of a line from 151° 29′ 45" W. longitude, 59° 11′ 50" N. latitude, to 151° 34′ 45" W. longitude, 59° 10′ 45" N. latitude, to commercial salmon fishing seven days per week effective at 6:00 a.m. Saturday, August 10, until further notice.

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Table 8. (page 9 of 9)

Number/ Issue Date	Description
	Opens waters of Bruin Bay, Rocky Cove, and Ursus Cove Subdistricts in the Kamishak Bay District to commercial salmon fishing seven days per week and allows fishing up to the stream mouths of Brown's Peak Creek and Sunday Creek, effective at 6:00 a.m. Saturday, August 10, until further notice.
2-F-H-31-91 August 14	Opens waters of the North Section of the Port Dick Subdistrict in the Outer District to commercial salmon fishing seven days per week effective at 6:00 a.m. Thursday, August 15, until further notice.
2-F-H-32-91 August 22	Closes the Southern District personal use coho salmon gillnet fishery effective at 9:00 p.m. Friday, August 23, for the remainder of 1991.

Table 9. Total return of adult pink salmon to the Tutka Bay Hatchery and the Halibut Cove Lagoon remote release site in the Southern District of Lower Cook Inlet, 1991.

COMMERCIAL HARVEST:	
Tutka Bay/Lagoon:	
Purse Seine	12,404
Set Gillnet	0
Cost Recovery	101,837
Tutka Commercial Harvest	114,241
Halibut Cove/Lagoon:	
Purse Seine	90,754
Set Gillnet	0
Halibut Cove/Lagoon Commercial Harvest	90,754
SPORT HARVEST:	
Tutka Lagoon	2,000
Halibut Cove Lagoon	0
Homer Spit Fishing Lagoon	500
Total Sport Catch	2,500
ESCAPEMENT:	
Tutka Creek and Channel	16,820
Tutka Hatchery Egg-take	103,100
Total Escapement	119,920
Total Return	327,415

Table 10. Commercial purse seine catch of sac roe herring in short tons, and average roe recovery by area and date, Kamishak Bay District, Lower Cook Inlet, 1991.

Area	Date	Tons	Roe %
Chenik Reef	4/26	1,992.2	11.3
Total		1,992.2	11.3

Table 11. Total biomass estimates and commercial catch of Pacific herring in short tons by age class, Kamishak Bay District, 1991, and 1992 forecast.

Age	1991 Estimated Biomass	1991 Commercial Harvest	Percent by Weight	1992 Forecast Biomass	Percent by Weight
1					
2					
3	692.4	75.9	3.8		
4	731.5	80.3	4.0	2,840	17.3
5	1,254.1	137.5	6.9	825	5.0
6	1,737.4	190.6	9.6	1,191	7.2
7	7,685.2	843.0	42.3	1,540	9.4
8	3,453.7	378.8	19.0	6,529	39.7
9	625.0	68.5	3.4	2,399	14.6
10	1,067.2	117.0	5.9	348	2.1
11	452.2	49.6	2.5	484	2.9
12	240.2	26.3	1.3	154	0.9
13	167.8	18.5	0.9	83	0.5
14	56.3	6.1	0.3	28	0.2
15	0	0	0	10	0.1
TOTAL	18,163.0	1,992.2		16,643	

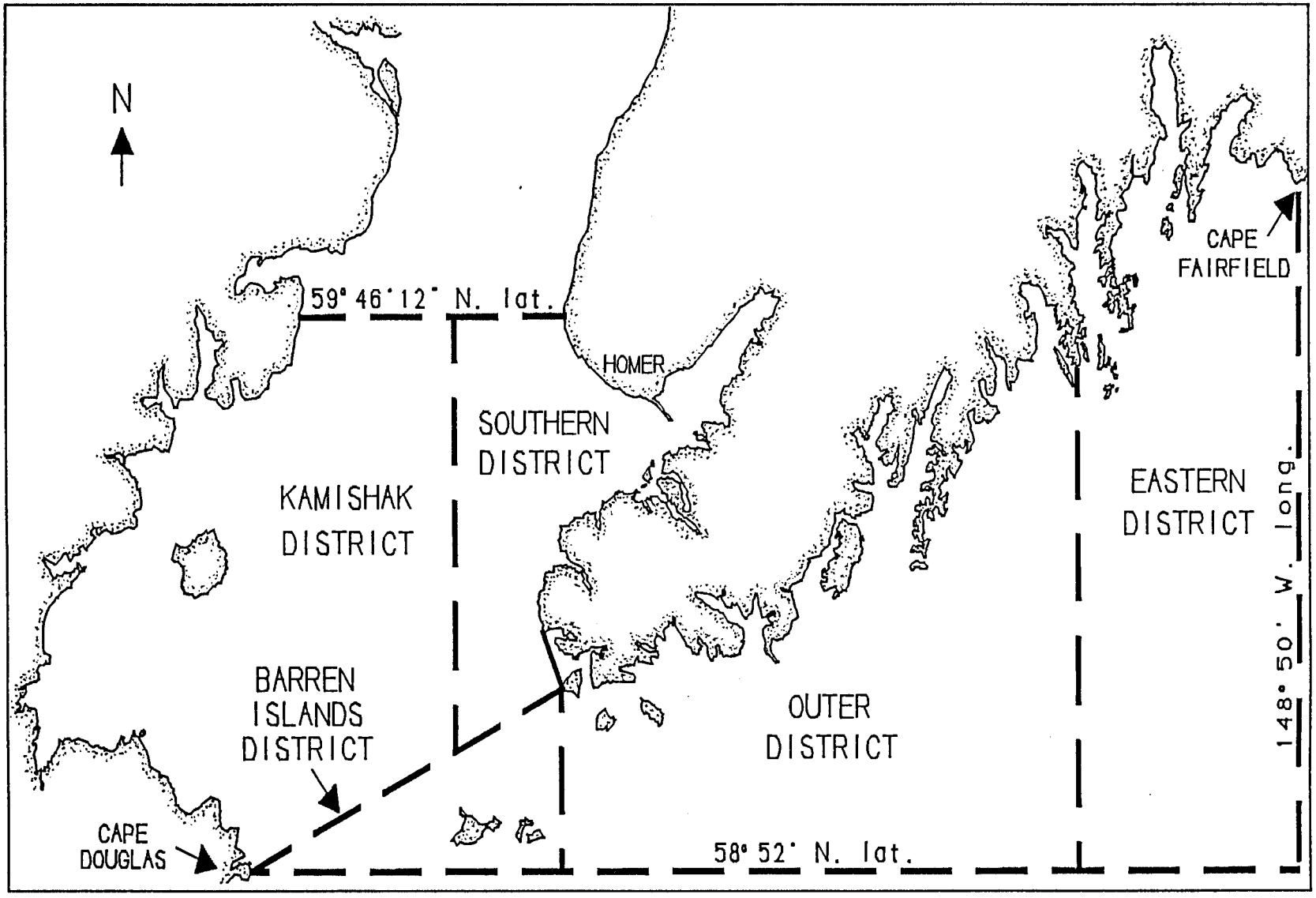

Figure 1. Lower Cook Inlet salmon and herring management area (not drawn to scale).

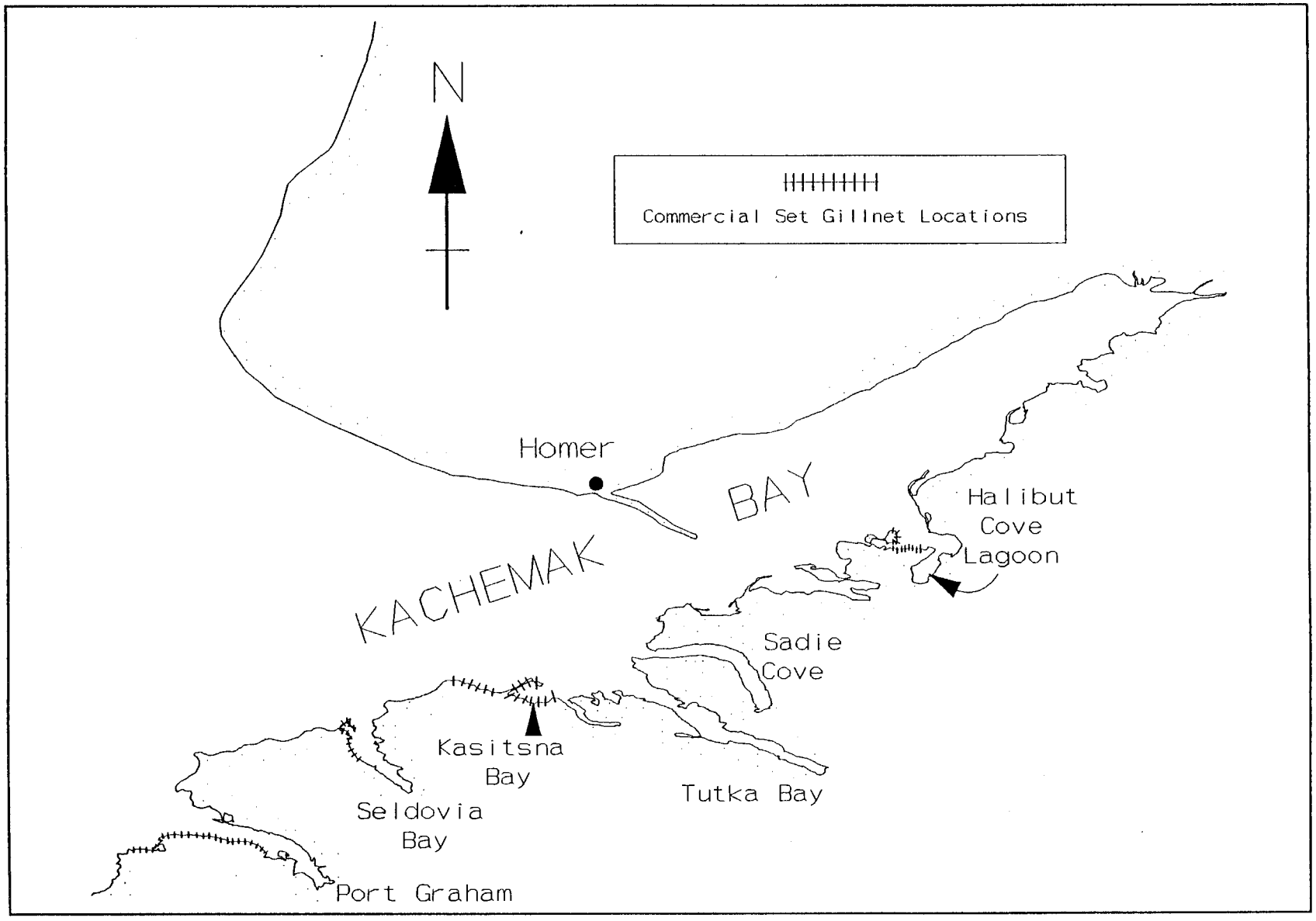

Figure 2. Commercial set gillnet locations in the Southern District of Lower Cook Inlet.

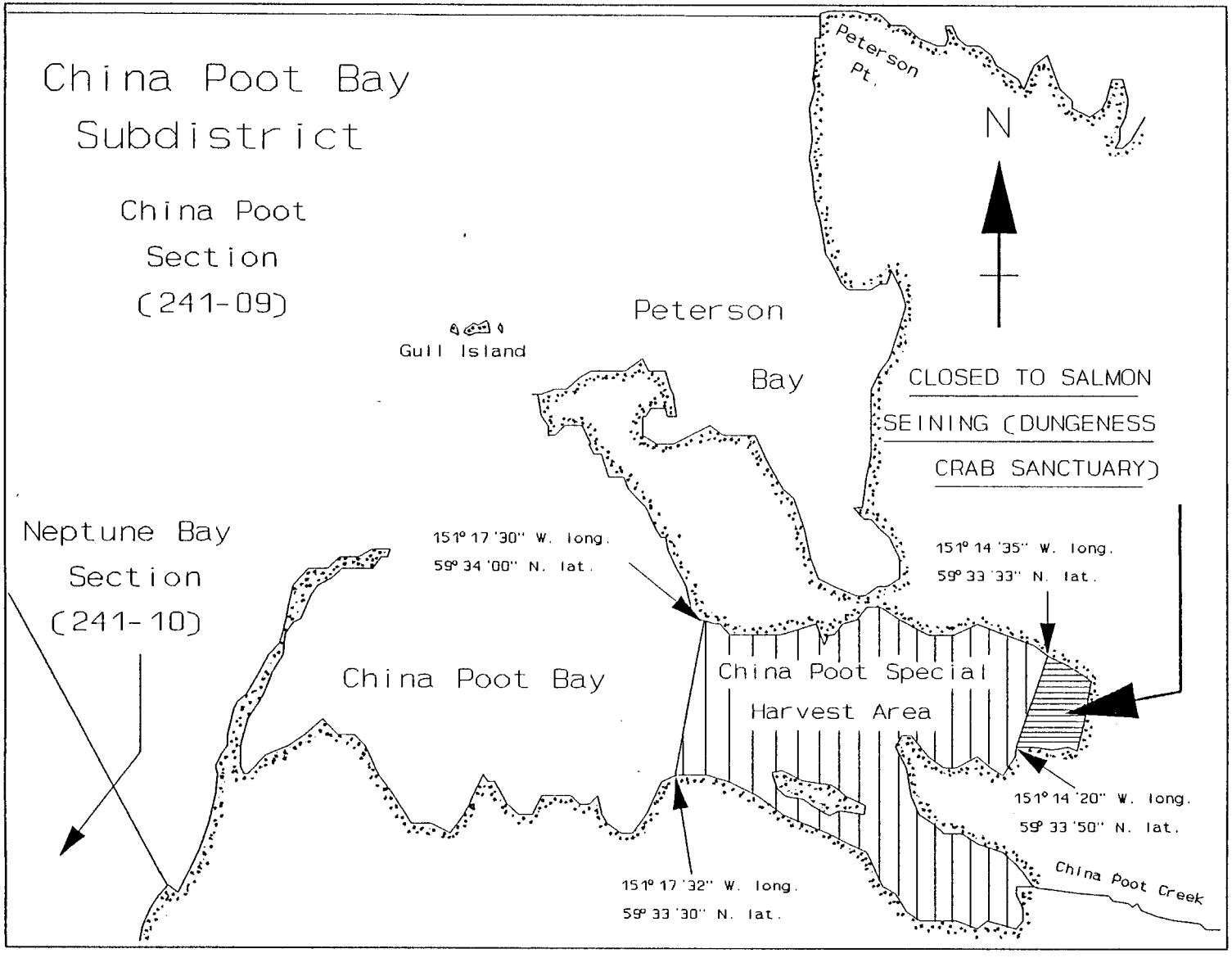

Figure 3. China Poot Special Harvest Area for salmon hatchery cost recovery in the Southern District of Lower Cook Inlet.

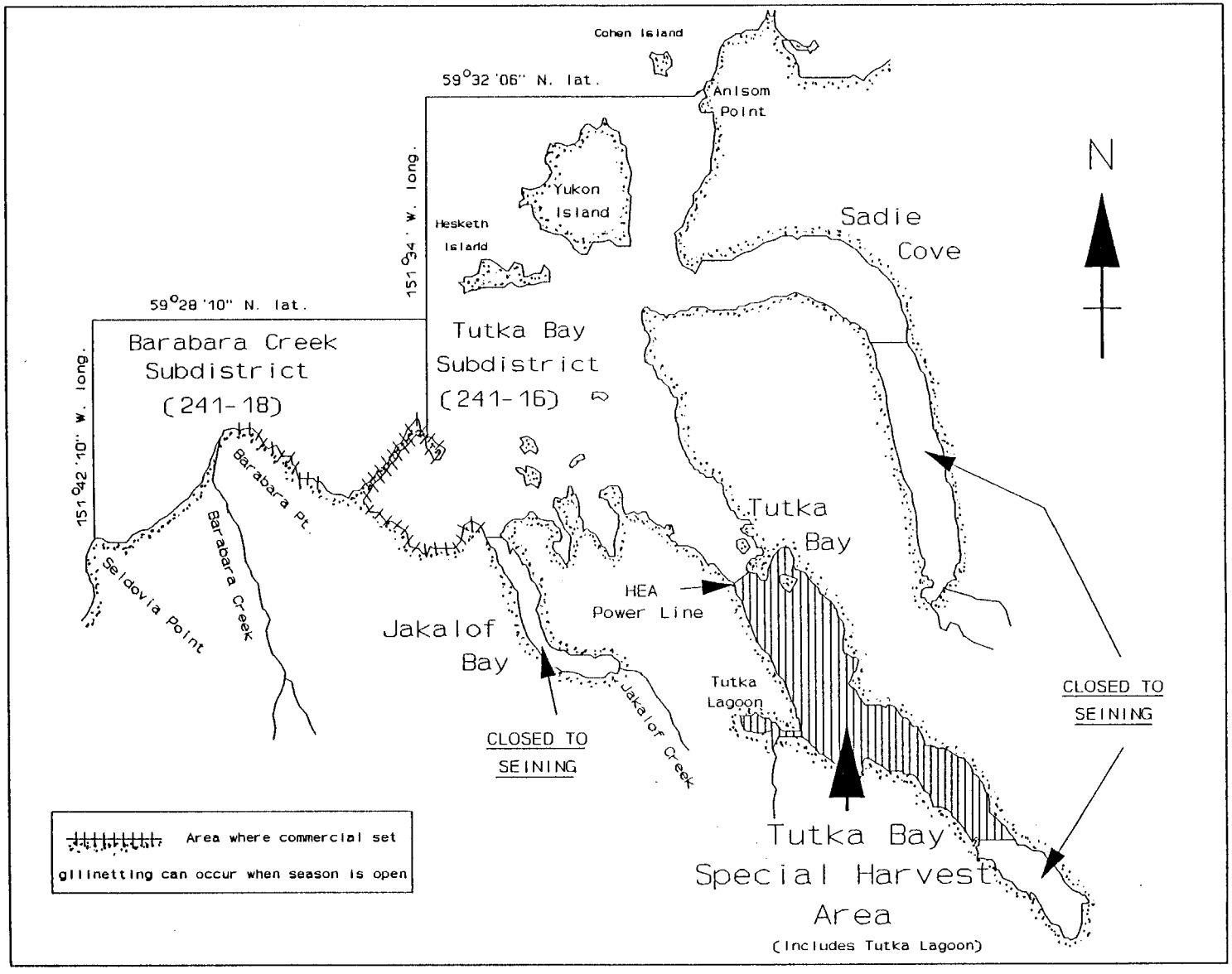

Figure 4. Tutka Special Harvest Area for salmon hatchery cost recovery in the Southern District of Lower Cook Inlet.

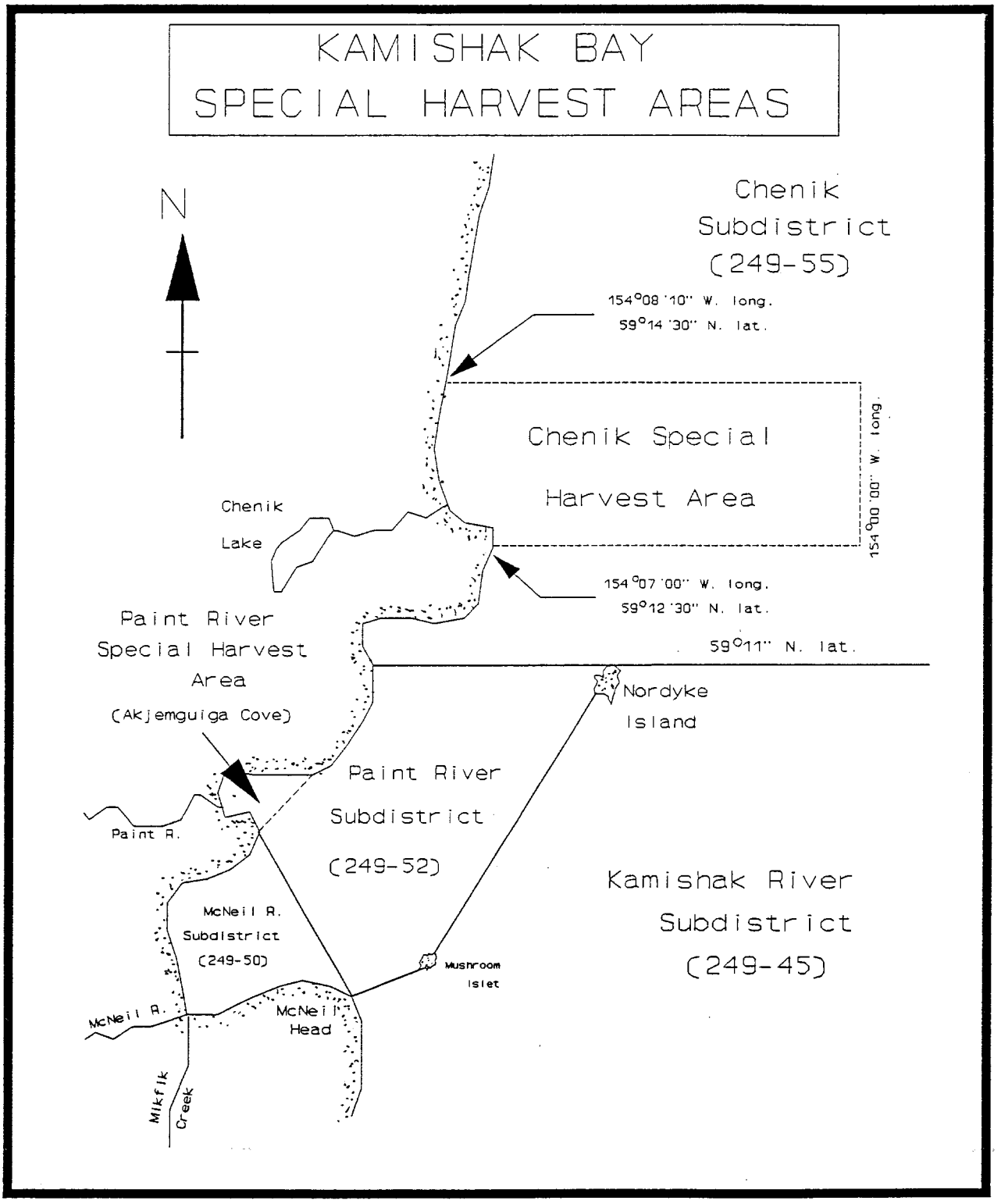

Figure 5. Chenik and Paint River Special Harvest Areas for salmon hatchery cost recovery in the Kamishak Bay District of Lower Cook Inlet.

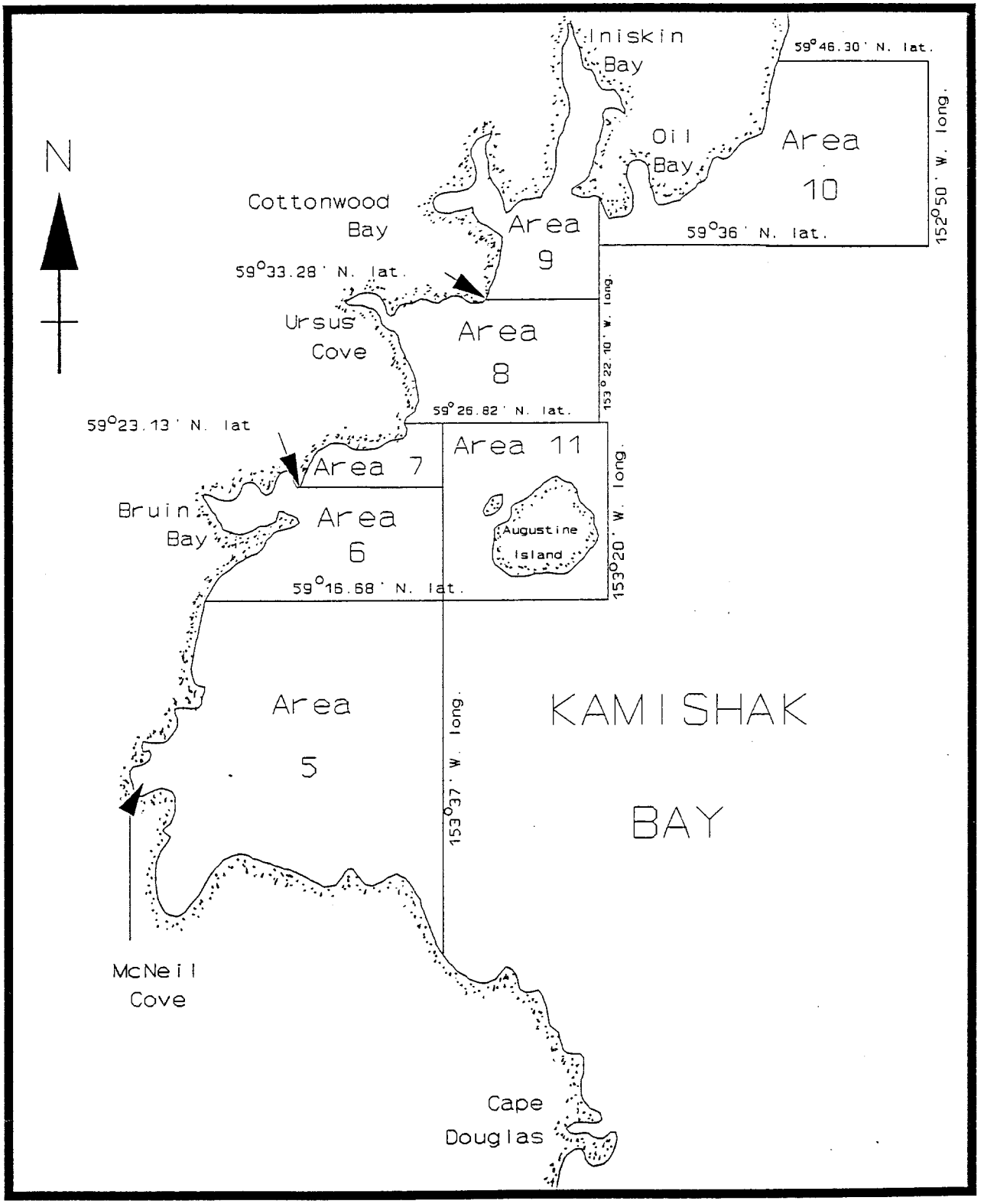

Figure 6. Commercial herring fishing areas in the Kamishak Bay District of the Lower Cook Inlet management area.

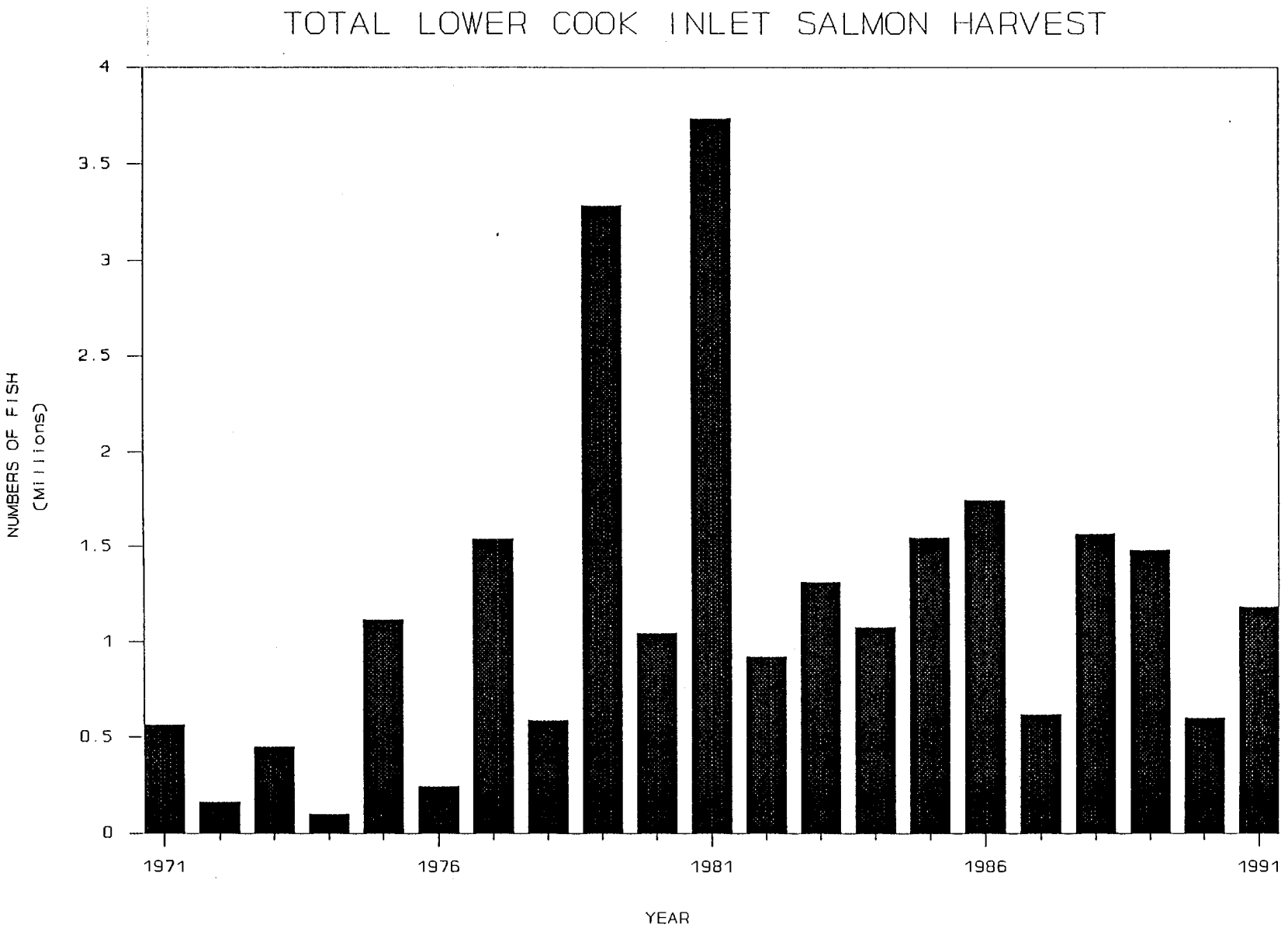

Figure 7. Total commercial salmon catch, Lower Cook Inlet, 1971 - 1991.

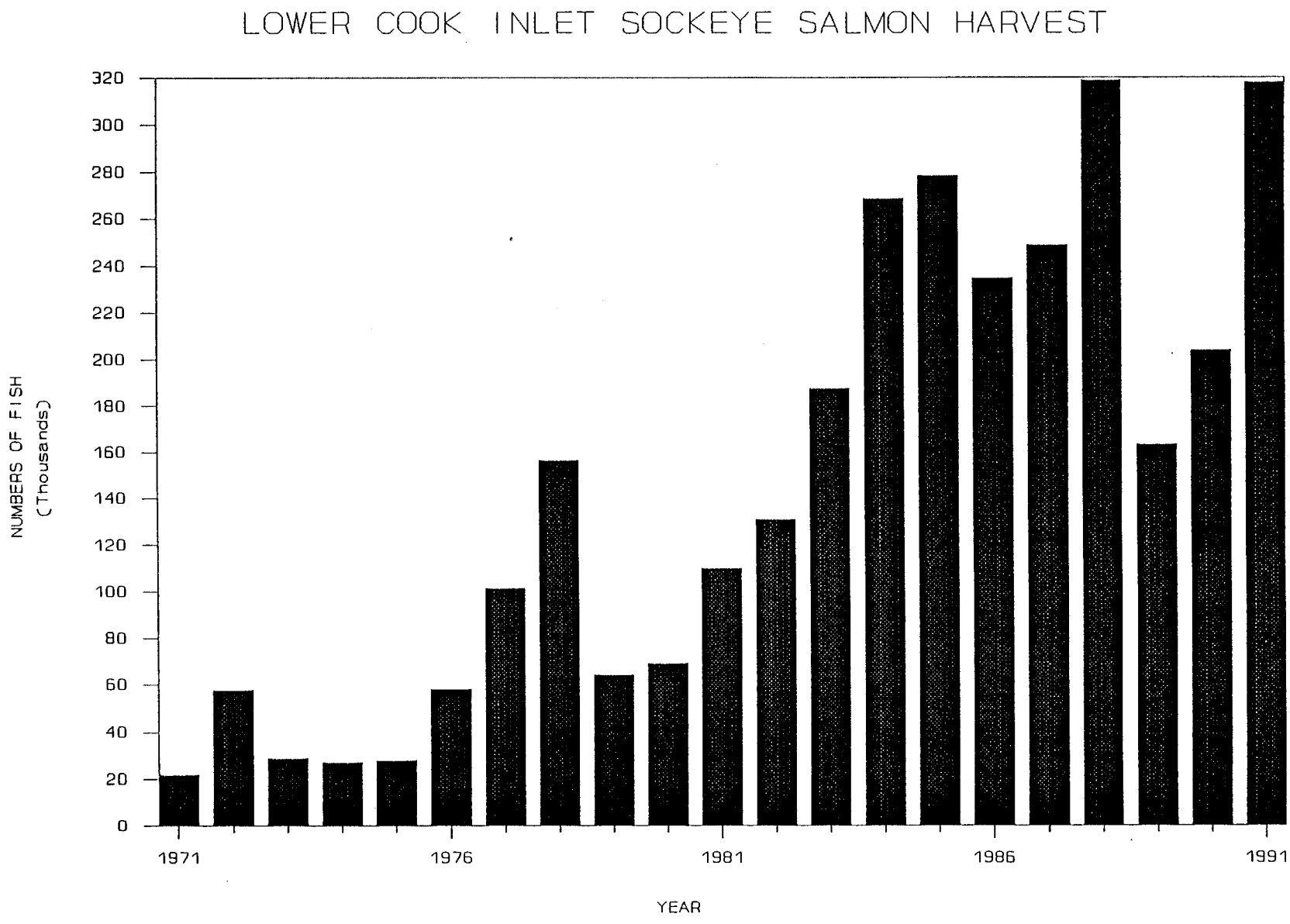

Figure 8. Commercial sockeye salmon catch, Lower Cook Inlet, 1971 - 1991.

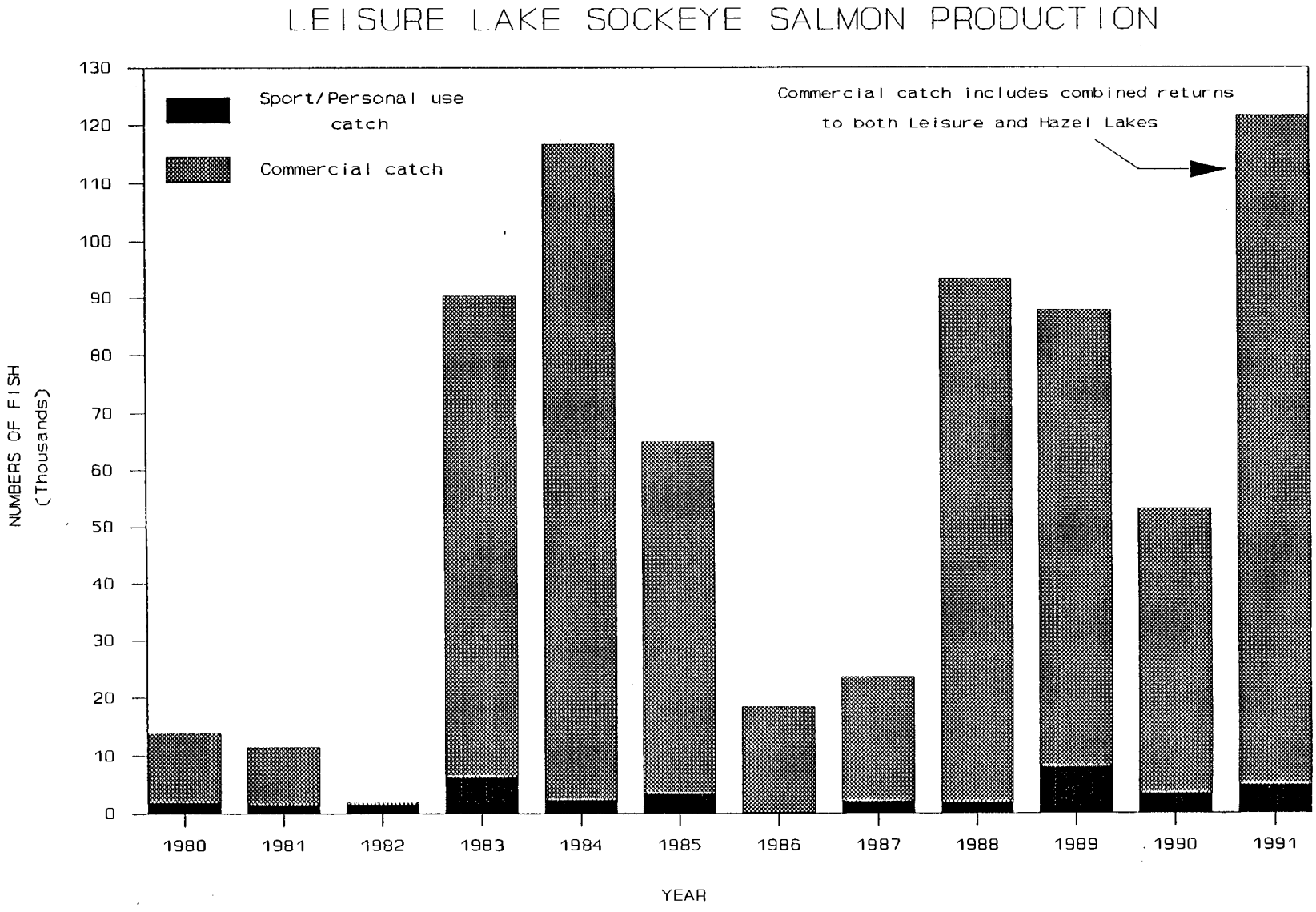

Figure 9. Sockeye salmon returns to Leisure Lake in the Southern District of Lower Cook Inlet, 1980 - 1991.

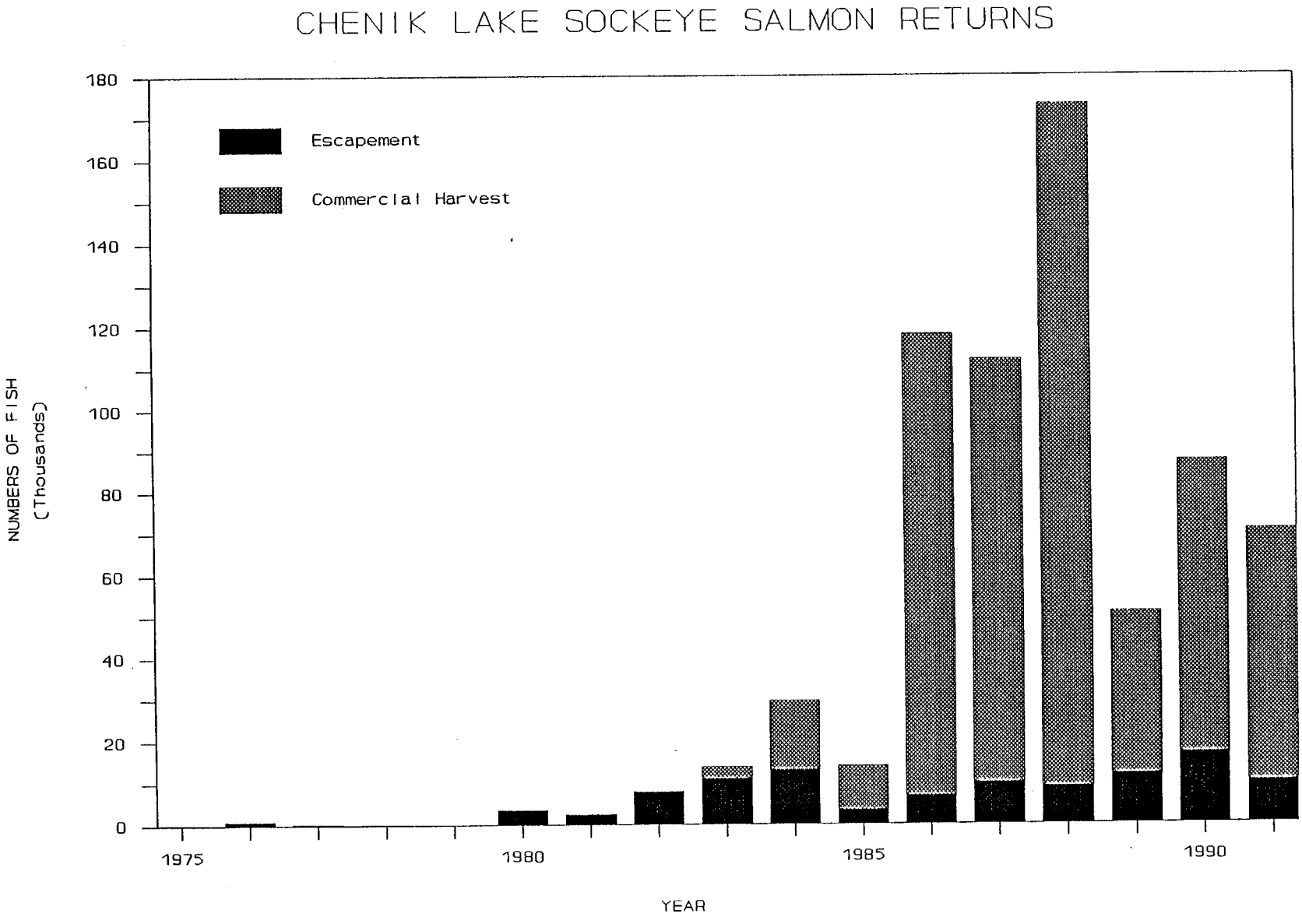

Figure 10. Sockeye salmon returns to Chenik Lake in the Kamishak Bay District of Lower Cook Inlet, 1975 - 1991.

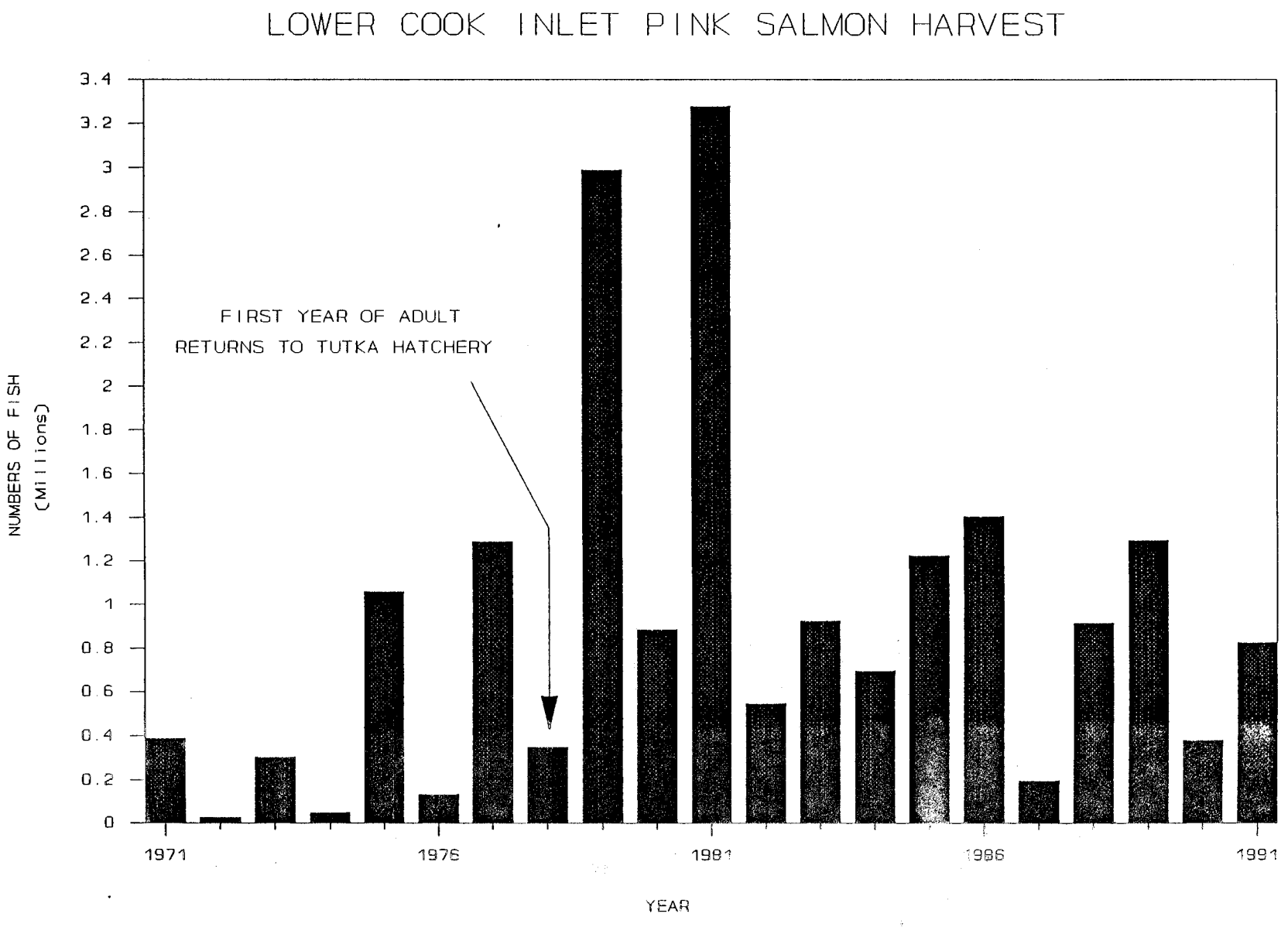

Figure 11. Commercial pink salmon catch, Lower Cook Inlet, 1971 - 1991.

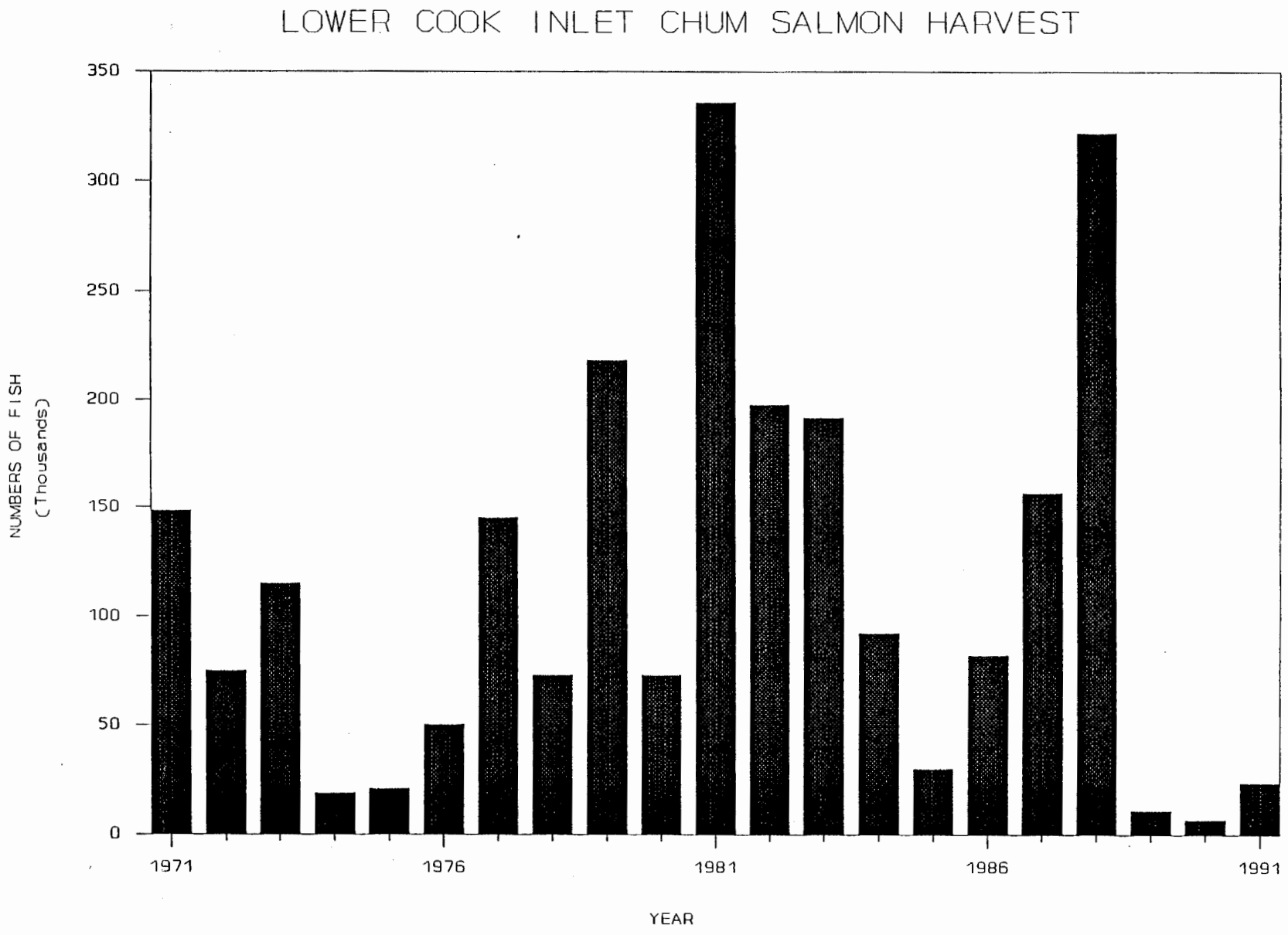

Figure 12. Commercial chum salmon catch, Lower Cook Inlet, 1971 - 1991.

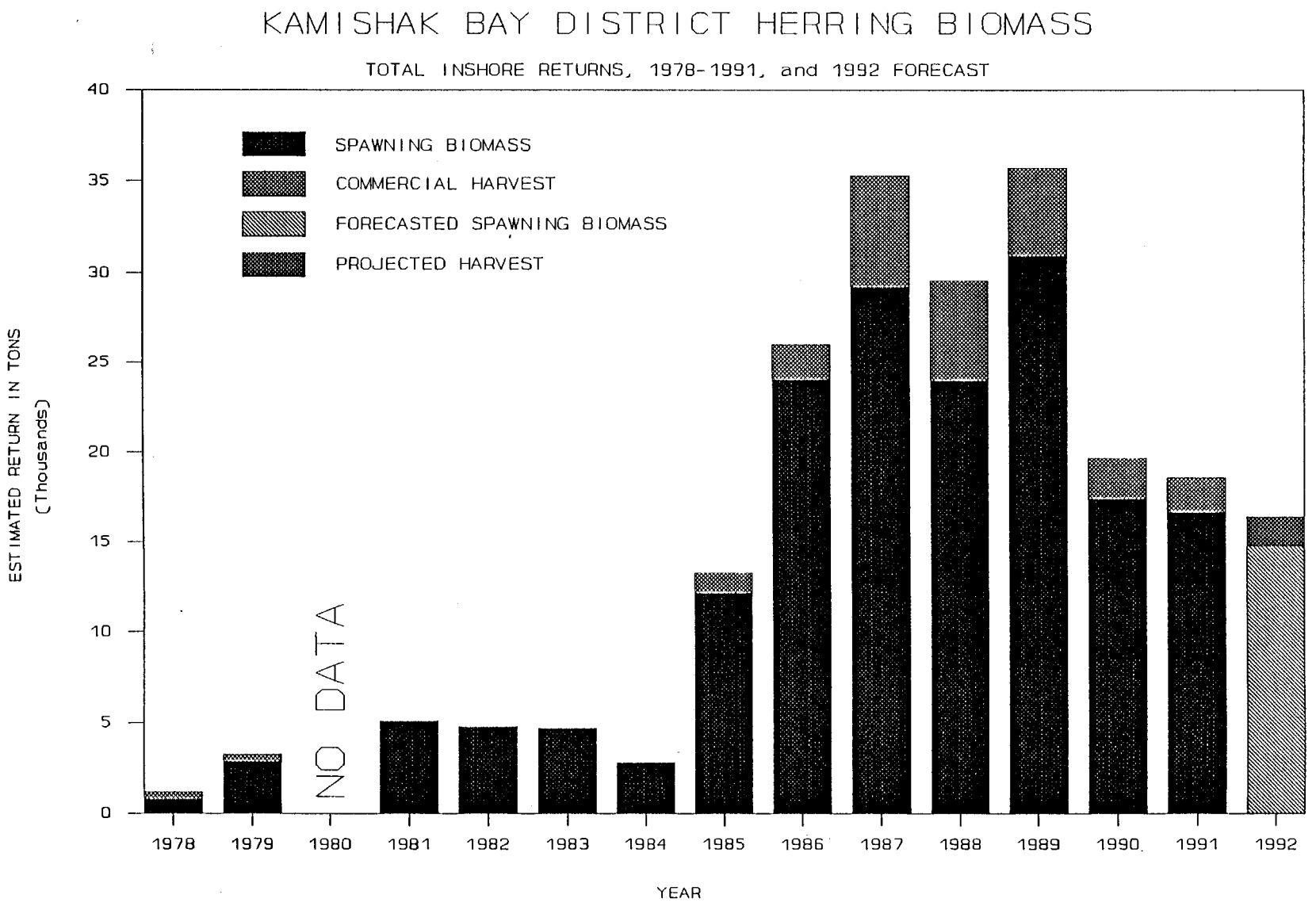

Figure 13. Biomass estimates and commercial harvests of Pacific herring in the sac roe seine fishery, Kamishak Bay District, Lower Cook Inlet, 1978 - 1991, and 1992 projection.

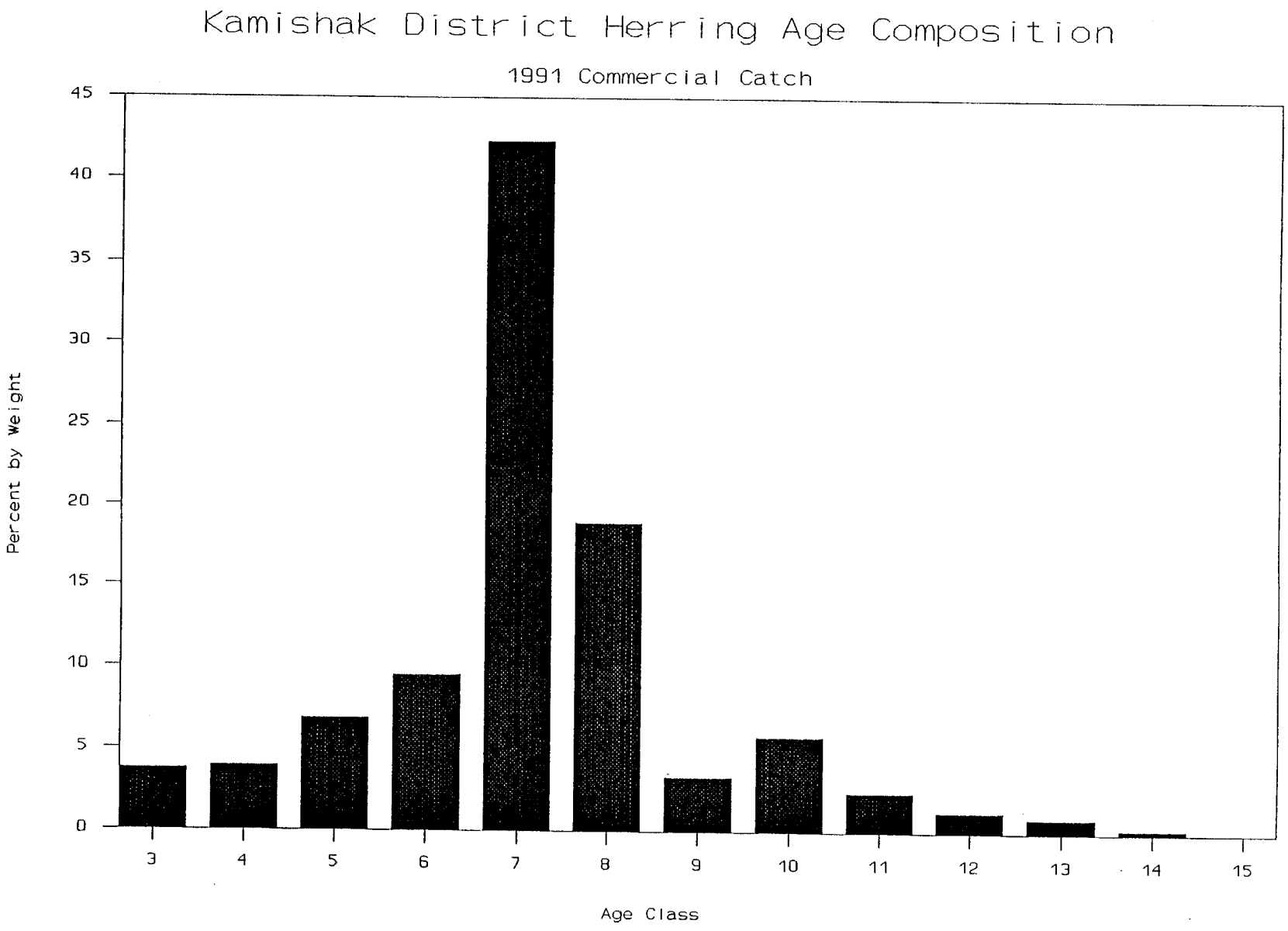

Figure 14. Weighted age class composition of the Pacific herring commercial sac roe harvest, Kamishak Bay District, Lower Cook Inlet, 1991.

Appendix Table 1. Salmon fishing permits issued and fished, by gear type, Lower Cook Inlet, 1975 - 1991[a].

Year	Seines				
	Permanent Permit	Interim Permit	Total	Seines Fished	Set Nets Fished
1975	49	51	100	63	27
1976	63	16	79	53	25
1977	72	10	82	72	26
1978	74	9	83	72	39
1979	75	9	84	75	38
1980	75	9	84	83	40
1981	75	10	85	85	40
1982	77	7	84	69	39
1983	78	5	83	83	24
1984	78	3	81	54	35
1985	80	1	81	51	34
1986	79	0	79	62	34
1987	79	0	79	66	29
1988	79	0	79	71	27
1989	83	0	83	64	23
1990	82	1	83	71	20
1991	82	1	83	68	20
1975-90 Average	75	8	83	68	33

[a] Data source: Commercial Fisheries Entry Commission and final IBM computer runs.

Appendix Table 2. Exvessel value of the commercial salmon harvest in thousand of dollars by species, Lower Cook Inlet, 1971 - 1991[a].

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1971	1	38	7	248	144	438
1972	1	130	6	22	146	305
1973	3	113	5	310	251	682
1974	5	283	30	100	77	495
1975	3	106	27	1,456	71	1,663
1976	7	287	13	207	217	731
1977	7	620	9	1,719	604	2,959
1978	62	1,516	52	370	341	2,341
1979	36	621	68	4,495	1,097	6,317
1980	12	336	64	1,196	298	1,906
1981	18	740	69	5,334	1,346	7,507
1982	28	827	367	406	820	2,448
1983	20	704	57	696	513	1,990
1984	23	1,393	120	635	242	2,413
1985	47	1,637	86	974	78	2,822
1986	21	1,414	132	1,245	201	3,013
1987	27	1,951	118	295	598	2,989
1988	32	3,812	127	2,237	2,548	8,756
1989	33	1,213	59	1,660	39	3,004
1990	29	1,287	28	306	31	1,681
1991	19	1,115	36	275	48	1,495
1971-90 Average	21	951	72	1,196	483	2,723

[a] Values obtained by using the formula: (average price per lb.) x (average weight of fish) x (catch) = Exvessel value.

Appendix Table 3. Average salmon price in dollars per pound by species, Lower Cook Inlet, 1971 - 1991.

Year	Chinook	Sockeye	Coho	Pink	Chum
1971	0.53	0.28	0.24	0.18	0.15
1972	0.45	0.36	0.44	0.20	0.28
1973	0.93	0.48	0.39	0.27	0.29
1974	0.76	1.54	0.72	0.48	0.56
1975	0.61	0.61	0.49	0.37	0.43
1976	0.91	0.77	0.59	0.37	0.48
1977	1.07	0.86	0.55	0.35	0.45
1978	1.09	1.31	0.97	0.30	0.54
1979	1.54	1.53	0.89	0.43	0.60
1980	1.30	0.88	0.85	0.42	0.52
1981	1.35	1.10	0.75	0.44	0.49
1982	1.29	1.05	0.87	0.23	0.46
1983	1.00	0.75	0.70	0.25	0.29
1984	1.29	1.05	0.77	0.26	0.28
1985	1.60	1.25	0.85	0.22	0.31
1986	1.25	1.40	0.85	0.26	0.30
1987	1.25	1.60	1.00	0.42	0.46
1988	1.25	2.50	1.80	0.80	0.84
1989	1.25	1.60	0.70	0.40	0.40
1990	1.35	1.55	0.60	0.30	0.50
1991	1.12	0.83	0.29	0.13	0.27

Appendix Table 4. Salmon average weight in pounds per fish by species in the commercial fishery, Lower Cook Inlet, 1971 - 1991[a].

Year	Chinook	Sockeye	Coho	Pink	Chum
1971	25.9	6.0	6.3	3.5	6.6
1972	25.0	6.2	6.1	3.9	6.9
1973	22.3	8.1	6.1	3.7	7.4
1974	36.1	6.7	6.4	4.1	7.2
1975	33.2	6.2	8.8	3.7	7.6
1976	16.1	6.4	7.0	4.1	8.9
1977	30.1	7.2	5.9	3.8	9.2
1978	32.3	7.4	8.2	3.5	8.6
1979	18.9	6.3	6.2	3.5	8.2
1980	21.7	5.5	5.2	3.2	7.8
1981	12.5	6.1	8.5	3.7	8.1
1982	20.6	6.0	9.0	3.2	9.0
1983	22.8	5.0	7.2	3.0	9.2
1984	28.8	4.7	8.8	3.5	8.9
1985	28.0	4.7	9.8	3.5	8.2
1986	20.6	4.3	8.6	3.4	8.1
1987	18.1	4.9	8.2	3.5	8.3
1988	15.3	4.8	8.9	3.0	9.4
1989	14.1	4.6	7.0	3.1	8.6
1990	13.8	4.1	7.1	2.8	8.9
1991	12.3	4.2	6.6	2.6	7.5
1971-90 Average	22.8	5.8	7.5	3.5	8.3

[a] Values obtained from commercial fish catch & production statistical leaflets (1971-74); remaining years from IBM computer runs.

Appendix Table 5. Commercial salmon catch in numbers of fish by species, Lower Cook Inlet, 1971 - 1991[a].

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1971	73	22,234	4,561	392,871	148,602	568,341
1972	88	57,897	2,234	28,663	75,543	164,425
1973	145	29,136	2,101	307,403	115,513	454,298
1974	183	27,428	6,514	50,601	19,210	103,936
1975	142	28,142	6,211	1,063,338	21,646	1,119,479
1976	450	58,159	3,216	136,445	50,822	249,092
1977	217	101,597	1,798	1,293,932	145,789	1,543,333
1978	1,747	156,404	6,529	352,561	73,518	590,759
1979	1,238	64,417	12,393	2,990,929	218,490	3,287,467
1980	424	69,442	14,505	889,703	73,492	1,047,566
1981	1,086	110,255	10,776	3,279,183	336,093	3,737,393
1982	1,066	131,320	46,892	551,589	198,185	929,052
1983	873	187,645	11,219	927,607	192,319	1,319,663
1984	714	268,950	16,797	700,622	92,540	1,079,623
1985	1,043	278,694	10,327	1,229,708	30,640	1,550,412
1986	796	234,861	18,852	1,408,293	82,688	1,745,490
1987	1,179	248,848	14,354	201,429	157,018	622,828
1988	1,694	319,008	7,946	921,296	321,911	1,571,855
1989	1,893	163,271	12,089	1,296,926	11,305	1,485,484
1990	1,560	203,895	9,297	383,670	6,951	605,373
1991	1,419	317,947	19,047	828,709	24,232	1,191,354
20 Year Avg.	831	138,080	10,931	920,338	118,614	1,188,793
1971-80 Avg.	471	61,486	6,006	750,645	94,263	912,870
1981-90 Avg.	1,190	214,675	15,855	1,090,032	142,965	1,464,717
'91 % of Ttl.	0.12	26.69	1.60	69.56	2.03	100.0

[a] Data source: Final IBM computer runs.

Appendix Table 6. Commercial salmon catch in numbers of fish by species in the Southern District, Lower Cook Inlet, 1971 - 1991[a].

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1971	41	18,403	3,151	50,066	2,857	74,518
1972	69	31,345	1,283	9,126	4,936	46,759
1973	139	24,072	1,241	97,574	3,588	126,614
1974	182	27,029	3,054	48,875	2,725	81,865
1975	142	27,393	3,039	893,615	5,428	929,617
1976	442	35,280	1,905	99,817	1,517	138,961
1977	182	54,663	1,255	157,025	6,734	219,859
1978	1,511	141,088	4,318	251,761	5,525	404,203
1979	1,199	37,342	10,846	986,909	8,221	1,044,517
1980	414	42,929	11,568	478,019	4,605	537,535
1981	1,024	77,880	7,976	1,453,982	20,920	1,561,782
1982	926	43,433	7,165	296,556	18,466	366,546
1983	858	133,671	3,433	690,254	14,281	842,497
1984	661	160,654	3,193	336,595	8,065	509,168
1985	1,007	84,149	4,258	518,889	5,513	613,816
1986	776	36,838	3,095	542,521	5,560	588,790
1987	1,158	89,662	2,163	90,522	5,030	188,535
1988	1,655	105,302	2,987	852,382	7,742	970,068
1989	1,889	98,052	6,667	987,488	3,141	1,097,237
1990	1,546	82,412	1,522	178,087	2,433	266,030
1991	1,399	170,224	9,415	253,962	1,962	436,962
20 Year Avg.	791	67,580	4,207	451,003	6,864	530,446
1971-80 Avg.	432	43,954	4,166	307,279	4,614	360,445
1981-90 Avg.	1,150	91,205	4,249	594,728	9,115	700,447
'91 % of Ttl.	0.32	38.96	2.15	58.12	0.45	100.0

[a] Data source: Final IBM computer runs.

Appendix Table 7. Commercial salmon set gillnet catch in numbers of fish by species in the Southern District, Lower Cook Inlet, 1971 - 1991[a].

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1971	41	18,398	1,449	8,564	1,352	29,804
1972	69	31,340	323	6,303	2,819	40,854
1973	134	23,970	1,089	20,222	2,374	47,789
1974	175	26,996	3,010	11,097	2,713	43,991
1975	96	26,588	2,337	49,490	4,020	82,531
1976	176	33,993	1,321	13,412	1,353	50,255
1977	175	54,404	869	38,064	2,765	96,277
1978	1,052	86,934	3,053	11,556	4,117	106,712
1979	483	34,367	7,595	69,368	5,266	117,079
1980	225	29,922	8,038	26,613	2,576	67,374
1981	222	53,665	6,735	68,794	8,524	137,940
1982	894	42,389	5,557	15,838	7,113	71,791
1983	822	41,707	1,799	20,533	4,377	69,238
1984	639	40,987	2,862	17,836	5,008	67,332
1985	958	23,188	3,908	22,898	4,221	55,173
1986	745	21,807	2,827	14,244	2,426	42,049
1987	653	28,209	2,025	9,224	2,419	42,530
1988	1,145	14,758	2,819	29,268	4,423	52,413
1989	1,281	13,970	4,792	16,210	1,877	38,130
1990	1,361	15,863	1,046	12,646	1,938	32,854
1991	842	20,525	5,011	3,954	1,577	31,909
20 Year Avg.	567	33,173	3,173	24,109	3,584	64,606
1971-80 Avg.	263	36,691	2,908	25,469	2,936	68,267
1981-90 Avg.	872	29,654	3,437	22,749	4,233	60,945
'91 % of Ttl.	2.64	64.32	15.07	12.39	4.94	100.00

[a] Data source: Final IBM computer runs.

Appendix Table 8. Commercial salmon catch in numbers of fish by species in the Outer District, Lower Cook Inlet, 1971 - 1991[a].

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1971	0	1,625	174	310,706	118,995	431,500
1972	7	26,092	17	963	43,466	70,545
1973	1	2,006	31	195,342	76,286	273,666
1974	1	206	21	1,300	11,924	13,452
1975	0	124	7	159,908	11,348	171,387
1976	7	18,886	0	93	412	19,398
1977	34	33,733	78	1,129,250	70,167	1,233,262
1978	236	10,695	45	70,080	19,224	100,280
1979	30	25,297	135	1,945,536	180,558	2,151,556
1980	10	22,514	16	154,041	32,246	208,827
1981	61	18,133	485	1,714,115	238,393	1,971,187
1982	129	66,781	92	67,523	63,075	197,600
1983	14	16,835	54	199,794	27,203	243,900
1984	3	29,276	41	89,085	3,204	121,609
1985	19	91,957	3,210	618,222	11,844	725,252
1986	6	48,472	5,052	401,755	11,701	466,986
1987	14	31,845	2,481	23,890	28,663	86,893
1988	5	9,501	2	6,094	71,202	86,804
1989	1	10,286	72	52,677	43	63,079
1990	2	17,404	74	191,320	614	209,414
1991	2	6,408	12	359,664	14,337	380,423
20 Year Avg.	29	24,083	604	366,585	51,028	442,330
1971-80 Avg.	33	14,118	52	396,722	56,463	467,387
1981-90 Avg.	25	34,049	1,156	336,448	45,594	417,272
'91 % of Ttl.	0.00	1.68	0.00	94.54	3.77	100.0

[a] Data source: Final IBM computer runs.

Appendix Table 9. Commercial salmon catch in numbers of fish by species in the Eastern District, Lower Cook Inlet, 1971 - 1991[a].

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1971	32	2,203	1,115	5	423	3,778
1972	12	413	903	18,232	767	20,327
1973	5	3,057	801	1,919	55	5,837
1974	0	193	524	378	7	1,102
1975	0	596	124	383	2	1,105
1976	0	5	200	35,423	45	35,673
1977	0	5,776	360	1,349	3,229	10,714
1978	0	2	582	29,738	100	30,422
1979	0	0	296	0	0	296
1980	0	122	426	155,779	720	157,047
1981	0	9,270	470	44,989	3,279	58,008
1982	0	3,092	950	143,639	7,698	155,379
1983	0	25,932	594	36,154	7,934	70,614
1984	47	54,420	536	136,797	10,535	202,335
1985	11	24,338	835	92,403	5,144	122,731
1986	0	3,055	770	40,243	3,757	47,825
1987	0	3,687	1,631	14,333	14,913	34,564
1988	1	20,253	486	1,740	24,668	47,148
1989	0	8,538	5,346	92	312	14,288
1990	0	7,682	7,645[b]	11,815	307	27,449
1991	1	4,703	7,283[b]	167,250	80	179,317
20 Year Avg.	5	8,632	1,230	38,271	4,195	52,332
1971-80 Avg.	5	1,237	533	24,321	535	26,630
1981-90 Avg.	6	16,027	1,926	52,221	7,855	78,034
'91 % of Ttl.	0.00	2.62	4.06	93.27	0.04	100.0

[a] Data source: Final IBM computer runs.
[b] Inludes commercial seine catches, Seward Silver Salmon Derby entries, and fish taken for hatchery cost recovery purposes.

Appendix Table 10. Commercial salmon catch in numbers of fish by species in the Kamishak Bay District, Lower Cook Inlet, 1971 - 1991[a].

Year	Chinook	Sockeye	Coho	Pink	Chum	Total
1971	0	3	121	32,094	26,327	58,545
1972	0	47	31	342	26,374	26,794
1973	0	1	28	12,568	35,584	48,181
1974	0	0	2,915	48	4,554	7,517
1975	0	29	3,041	9,432	4,868	17,370
1976	1	3,988	1,111	1,112	48,848	55,060
1977	1	7,425	105	6,308	65,659	79,498
1978	0	4,619	1,584	982	48,669	55,854
1979	9	1,778	1,116	58,484	29,711	91,098
1980	0	3,877	2,495	101,864	35,921	144,157
1981	1	4,972	1,845	66,097	73,501	146,416
1982	11	18,014	38,685	43,871	108,946	209,527
1983	1	11,207	7,138	1,405	142,901	162,652
1984	3	24,600	13,027	138,145	70,736	246,511
1985	6	78,250	2,024	194	8,139	88,613
1986	14	146,496	9,935	423,774	61,670	641,889
1987	7	123,654	8,079	72,684	108,412	312,836
1988	33	183,952	4,471	61,080	218,299	467,835
1989	3	46,395	4	256,669	7,809	310,880
1990	12	96,397	26	2,448	3,597	102,480
1991	17	136,612	2,337	47,833	7,853	194,652
20 Year Avg.	5	37,785	4,889	64,480	56,526	163,686
1971-80 Avg.	1	2,177	1,255	22,323	32,652	58,407
1981-90 Avg.	9	73,394	8,523	106,637	80,401	268,964
'91 % of Ttl.	0.01	70.18	1.20	24.57	4.03	100.0

[a] Data source: Final IBM computer runs.

Appendix Table 11. Total commercial salmon catch in numbers of fish by district, Lower Cook Inlet, 1971 - 1991[a].

Year	Southern	Outer	Kamishak	Eastern	Total
1971	74,518	431,500	58,545	3,778	568,341
1972	46,759	70,545	26,794	20,327	164,425
1973	126,614	273,666	48,181	5,837	454,298
1974	81,865	13,452	7,517	1,102	103,936
1975	929,617	171,387	17,370	1,105	1,119,479
1976	138,961	19,398	55,060	35,673	249,092
1977	219,859	1,233,262	79,498	10,714	1,543,333
1978	404,203	100,280	55,854	30,422	590,759
1979	1,044,517	2,151,556	91,098	296	3,287,467
1980	537,535	208,827	144,157	157,047	1,047,566
1981	1,561,782	1,971,187	146,416	58,008	3,737,393
1982	366,546	197,600	209,527	155,379	929,052
1983	842,497	243,900	162,652	70,614	1,319,663
1984	509,168	121,609	246,511	202,335	1,079,623
1985	613,816	725,252	88,613	122,731	1,550,412
1986	588,790	466,986	641,889	47,825	1,745,490
1987	188,535	86,893	312,836	34,564	622,828
1988	970,068	86,804	467,835	47,148	1,571,855
1989	1,097,237	63,079	310,880	14,288	1,485,484
1990	266,030	209,414	102,480	27,449	605,373
1991	436,962	380,423	194,652	179,317	1,191,354
20 Year Avg.	530,446	442,330	163,686	52,332	1,188,793
1971-80 Avg.	360,445	467,387	58,407	26,630	912,870
1981-90 Avg.	700,447	417,272	268,964	78,034	1,464,717
'91 % of Ttl.	36.68	31.93	16.34	15.05	100.00

[a] Data source: Final IBM computer runs.

Appendix Table 12. Commercial chinook salmon catch in numbers of fish by district, Lower Cook Inlet, 1971-1991[a].

Year	Southern	Outer	Kamishak	Eastern	Total
1971	41	0	0	32	73
1972	69	7	0	12	88
1973	139	1	0	5	145
1974	182	1	0	0	183
1975	142	0	0	0	142
1976	442	7	1	0	450
1977	182	34	1	0	217
1978	1,511	236	0	0	1,747
1979	1,199	30	9	0	1,238
1980	414	10	0	0	424
1981	1,024	61	1	0	1,086
1982	926	129	11	0	1,066
1983	858	14	1	0	873
1984	661	3	3	47	714
1985	1,007	19	6	11	1,043
1986	776	6	14	0	796
1987	1,158	14	7	0	1,179
1988	1,655	5	33	1	1,694
1989	1,889	1	3	0	1,893
1990	1,546	2	12	0	1,560
1991	1,399	2	17	1	1,419
20 Year Avg.	791	29	5	5	831
1971-80 Avg.	432	33	1	5	471
1981-90 Avg.	1,150	25	9	6	1,190
'91 % of Ttl.	98.59	0.14	1.20	0.07	100.0

[a] Data source: Final IBM computer runs.

Appendix Table 13. Commercial sockeye salmon catch in numbers of fish by district, Lower Cook Inlet, 1971-1991[a].

Year	Southern	Outer	Kamishak	Eastern	Total
1971	18,403	1,625	3	2,203	22,234
1972	31,345	26,092	47	413	57,897
1973	24,072	2,006	1	3,057	29,136
1974	27,029	206	0	193	27,428
1975	27,393	124	29	596	28,142
1976	35,280	18,886	3,988	5	58,159
1977	54,663	33,733	7,425	5,776	101,597
1978	141,088	10,695	4,619	2	156,404
1979	37,342	25,297	1,778	0	64,417
1980	42,929	22,514	3,877	122	69,442
1981	77,880	18,133	4,972	9,270	110,255
1982	43,433	66,781	18,014	3,092	131,320
1983	133,671	16,835	11,207	25,932	187,645
1984	160,654	29,276	24,600	54,420	268,950
1985	84,149	91,957	78,250	24,338	278,694
1986	36,838	48,472	146,496	3,055	234,861
1987	89,662	31,845	123,654	3,687	248,848
1988	105,302	9,501	183,952	20,253	319,008
1989	98,052	10,286	46,395	8,538	163,271
1990	82,412	17,404	96,397	7,682	203,895
1991	170,224	6,408	136,612	4,703	317,947
20 Year Avg.	67,580	24,083	37,785	8,632	138,080
1971-80 Avg.	43,954	14,118	2,177	1,237	61,486
1981-90 Avg.	91,205	34,049	73,394	16,027	214,675
'91 % of Ttl.	53.54	2.02	42.97	1.48	100.0

[a] Data source: Final IBM computer runs.

Appendix Table 14. Commercial sockeye salmon catch in thousands of fish by subdistrict, Lower Cook Inlet, 1959 - 1991[a].

Location	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Resurr. Bay	0	0.1	0	0	0	0	0	0	0	74.5	99.4	1.8
Aialik Bay	1.3	0.2	4.3	2.6	0.5	0	0	0	0	0	0	3.1
Nuka Bay	8.3	6.7	8.2	5.1	0.5	0	2.0	0	2.2	1.5	0	1.0
Port Dick	0	0	0	0	0	0	0	0	0	0	0	0
Humpy Creek	1.3	1.4	0.8	2.0	1.1	0.7	1.4	1.5	1.9	2.7	1.7	1.3
Tutka Bay	1.1	1.7	3.0	5.2	2.9	9.0	5.2	6.0	11.8	6.3	5.6	6.0
Seldovia Bay	0.4	1.2	1.2	1.7	1.2	2.1	0.9	1.0	2.2	1.9	1.1	1.2
Port Graham Bay	6.6	7.8	5.2	6.8	7.8	5.5	3.5	2.7	10.4	7.7	4.3	3.7
Kamishak-Douglas	0	0	0	0	0	0	0	0	0	0	0	0
Mikfik Creek	0	0.7	0	0	0	1.9	0.2	0	0	0	8.9	2.8
Paint River	0	0	0	0	0	0	0	0	0	0	0	0
Chenik Creek	0	0	0	0	0	0	0	0	0.2	0	1.9	0
Bruin (Kirschner)	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous	2.6	4.9	0.1	1.9	1.1	1.5	0.8	4.1	0.3	0.6	0.1	0
Total	21.6	24.7	22.8	25.3	15.1	20.7	14.0	15.3	29.0	95.2	122.8	20.9

Location	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Resurr. Bay	2.2	0.1	0	0	0	0	0	0	0	0	0.6	0
Aialik Bay	0	0.3	3.1	0.2	0.6	0	5.8	0	0	0.1	8.7	3.0
Nuka Bay	1.6	26.1	1.1	0.1	0	18.9	31.1	10.6	24.4	21.5	17.2	66.3
Port Dick	0	0	0	0	0	0	0	0	0	0	0	0
Humpy Creek	1.3	3.7	2.1	3.0	3.5	5.4	3.8	12.9	6.2	11.5	11.3	1.2
Tutka Bay	10.0	14.8	8.1	10.8	12.6	14.2	21.3	92.1	15.6	13.2	41.0	15.8
Seldovia Bay	1.5	2.3	2.2	2.3	2.1	2.1	3.0	5.6	2.6	1.6	5.3	5.0
Port Graham Bay	5.6	10.5	11.7	10.9	9.2	13.6	26.6	30.5	12.9	16.5	20.3	21.5
Kamishak-Douglas	0	0	0	0	0	0.2	5.3	4.6	0.5	0	4.9	0
Mikfik Creek	0	0	0	0	0	3.8	2.1	0	1.2	3.9	0	17.8
Paint River	0	0	0	0	0	0	0	0	0	0	0	0
Chenik Creek	0	0	0	0	0	0	0	0	0	0	0	0.3
Bruin (Kirschner)	0	0	0	0	0	0	0	0	0	0	0	0
Miscellaneous	0	0.1	0.8	0.1	0.1	0	2.6	0.1	1.0	1.1	1.0	0.4
Total	22.2	57.9	29.1	27.4	28.1	58.2	101.6	156.4	64.4	69.4	110.3	131.3

Location	1983	1984	1985	1986	1987	1988	1989	1990	1991
Resurr. Bay	0	3.4	0.3	0	0.2	0	0	0	0
Aialik Bay	25.9	50.8	24.1	3.0	3.5	20.2	8.5	7.7	4.7
Nuka Bay	16.8	29.2	91.8	48.4	31.8	9.5	10.3	5.7	1.8
Port Dick	0	0	0	0	0	0	0	11.7	4.6
China Poot[b]	84.0	116.3	61.5	18.4	21.5	91.5	79.7	49.9	116.7[c]
Tutka Bay	29.5	26.7	14.9	13.2	14.7	6.9	9.5	7.9	7.1
Seldovia Bay	6.7	4.9	2.6	3.2	3.5	2.5	1.8	4.3	4.0
Port Graham Bay	13.4	12.5	3.5	2.0	2.4	1.4	0	0	0
Kamishak-Douglas	2.8	0	0.7	7.6	2.3	5.0	0	0.1	7.0
Mikfik Creek	5.8	10.7	67.0	27.5	21.4	14.6	7.0	9.1	12.9
Paint River	0	0	0	0	0	0	0	0	0.4
Chenik Creek	2.7	13.9	10.6	111.3	98.5	164.2	38.9	70.3	60.4
Bruin/Kirschner	0	0	0	0	0	0	0.2	14.5	55.9
Miscellaneous	0	0.6	1.7	0.3	49.2	3.2	7.4	22.7	42.4
Total	187.6	269.0	278.7	234.9	248.8	319.0	163.3	203.9	317.9

[a] Data source: Final IBM computer runs.
[b] China Poot Subdistrict was previously a part of Humpy Creek Subdistrict.
[c] Includes China Poot, Peterson, and Neptune Bays.

Appendix Table 15. Harvest of sockeye salmon returns to China Poot Bay in the Southern District of Lower Cook Inlet, by user group, 1979 - 1991.

Return Year	Sport Harvest	Personal Use	Commercial Harvest	Total Return[a]
1979	650	0	[b]	650
1980	1,000	1,000	12,000	14,000
1981	1,500	0	10,000	11,500
1982	450	1,320	200	3,400
1983	480	5,910	84,020	90,420
1984	500	2,000	114,360	117,360
1985	500	3,000	61,500	65,920
1986	100	150	18,350	18,800
1987	200	2,000	21,500	23,700
1988	500	1,500	91,469	93,939
1989	1,000	7,000	79,714	87,714
1990	500	3,000	49,587[c]	53,087
1991	1,000	4,000	117,000[c,d]	122,000[d]
1979-90 Avg.	615	2,240	49,336	52,772

[a] Total return counts include estimates for escapements (i.e. non-harvested fish).
[b] No data.
[c] Portions of the commercial sockeye harvest in China Poot Bay, Halibut Cove, and Tutka Bay Subdistricts were attributed to the Leisure Lake sockeye return.
[d] Includes returns to both Leisure and Hazel Lakes.

Appendix Table 16. Commercial catch and escapement of sockeye salmon at Chenik Lake in the Kamishak Bay District of Lower Cook Inlet, 1979 - 1991.

Year	Escapement	Harvest	Total Return
1975	100	[a]	100
1976	900	[a]	900
1977	200	[a]	200
1978	100	[a]	100
1979	[b]	[a]	[a]
1980	3,500	[a]	3,500
1981	2,500	[a]	2,500
1982	8,000	[a]	8,000
1983	11,000	2,800	13,800
1984	13,000	16,500	29,500
1985	3,500	10,500	14,000
1986	7,000	111,000	118,000
1987	10,000	102,000	112,000
1988	9,000	164,200	173,200
1989	12,000	38,905	50,905
1990	17,000	70,347	87,347
1991	10,189	60,397	70,586

[a] Closed to fishing.
[b] No data.

Appendix Table 17. Commercial coho salmon catch in numbers of fish by district, Lower Cook Inlet, 1970 - 1991[a].

Year	Southern	Outer	Kamishak	Eastern	Total
1971	3,151	174	121	1,115	4,561
1972	1,283	17	31	903	2,234
1973	1,241	31	28	801	2,101
1974	3,054	21	2,915	524	6,514
1975	3,039	7	3,041	124	6,211
1976	1,905	0	1,111	200	3,216
1977	1,255	78	105	360	1,798
1978	4,318	45	1,584	582	6,529
1979	10,846	135	1,116	296	12,393
1980	11,568	16	2,495	426	14,505
1981	7,976	485	1,845	470	10,776
1982	7,165	92	38,685	950	46,892
1983	3,433	54	7,138	594	11,219
1984	3,193	41	13,027	536	16,797
1985	4,258	3,210	2,024	835	10,327
1986	3,095	5,052	9,935	770	18,852
1987	2,163	2,481	8,079	1,631	14,354
1988	2,987	2	4,471	486	7,946
1989	6,667	72	4	5,346	12,089
1990	1,552	74	26	7,645[b]	9,297
1991	9,415	12	2,337	7,283[b]	19,047
20 Year Avg.	4,207	604	4,889	1,230	10,931
1971-80 Avg.	4,166	52	1,255	533	6,006
1981-90 Avg.	4,249	1,156	8,523	1,926	15,855
'91 % of Ttl.	49.43	0.06	12.27	38.24	100.0

[a] Data source: Final IBM computer runs.
[b] Includes commercial seine catches, Seward Silver Salmon Derby entries, and fish taken for hatchery cost recovery purposes.

Appendix Table 18. Commercial pink salmon catch in numbers of fish by district, Lower Cook Inlet, 1971 - 1991[a].

Year	Southern	Outer	Kamishak	Eastern	Total
1971	50,066	310,706	32,094	5	392,871
1972	9,126	963	342	18,232	28,663
1973	97,574	195,342	12,568	1,919	307,403
1974	48,875	1,300	48	378	50,601
1975	893,615	159,908	9,432	383	1,063,338
1976	99,817	93	1,112	35,423	136,445
1977	157,025	1,129,250	6,308	1,349	1,293,932
1978	251,761	70,080	982	29,738	352,561
1979	986,909	1,945,536	58,484	0	2,990,929
1980	478,019	154,041	101,864	155,779	889,703
1981	1,453,982	1,714,115	66,097	44,989	3,279,183
1982	296,556	67,523	43,871	143,639	551,589
1983	690,254	199,794	1,405	36,154	927,607
1984	336,595	89,085	138,145	136,797	700,622
1985	518,889	618,222	194	92,403	1,229,708
1986	542,521	401,755	423,774	40,243	1,408,293
1987	90,522	23,890	72,684	14,333	201,429
1988	852,382	6,094	61,080	1,740	921,296
1989	987,488	52,677	256,669	92	1,296,926
1990	178,087	191,320	2,448	11,815	383,670
1991	253,962	359,664	47,833	167,250	828,709
20 Year Avg.	451,003	366,585	64,480	38,271	920,338
1971-80 Avg.	307,279	396,722	22,323	24,321	750,645
1981-90 Avg.	590,728	336,448	106,637	52,221	1,090,032
'91 % of Ttl.	30.65	43.40	5.77	20.18	100.0

[a] Data source: Final IBM computer runs.

Appendix Table 19. Commercial pink salmon catch in thousands of fish by subdistrict during odd-numbered years, Lower Cook Inlet, 1959 - 1991[a].

Location	1959	1961	1963	1965	1967	1969	1971	1973	1975	1977	1979	1981
Humpy Creek	13.2	67.9	57.4	13.8	40.4	0.6	11.4	44.3	339.3	42.7	304.0	250.9
Tutka Bay	14.4	106.8	37.7	44.6	31.6	32.9	10.3	20.0	89.2	21.9	416.8	1,026.6
Seldovia	4.9	15.1	1.6	19.2	11.7	28.8	27.3	19.4	429.6	47.6	140.8	126.4
Pt. Graham Bay	5.3	1.0	2.7	12.4	5.1	2.0	1.0	13.9	18.3	44.8	124.7	45.9
Dogfish Bay	1.6	0	0	0.1	2.3	0	10.4	0.3	0	5.0	7.4	22.9
Port Chatham	1.2	0	0.8	0	0	0	26.3	20.6	16.0	1.4	174.4	55.8
Windy Bay	3.1	2.2	0	5.4	0	0	57.3	68.5	18.1	173.2	552.7	2.9
Rocky Bay	2.3	0	1.4	0.1	0	0	0.1	0.2	0	11.6	122.2	16.5
Port Dick	28.2	92.9	19.0	15.3	259.9	51.5	94.6	96.6	90.3	881.7	964.8	1,140.9
Nuka Bay	33.3	2.0	0.3	0	0.1	0	119.7	8.1	35.4	56.3	121.7	395.1
Resurrection Bay	8.4	0	0	0	1.2	0	0	0	0	0	0	32.6
Bruin Bay	0	0	12.3	0.9	2.1	0	11.7	0	0	6.2	40.3	51.9
Rocky/Ursus Coves	3.7	2.7	44.2	0	13.0	52.8	16.4	7.9	0	0	14.4	14.1
Iniskin and Cottonwood Bays	1.5	3.3	21.8	0	0.1	26.0	0	4.7	0	0.1	0.2	0
Miscellaneous	3.6	9.5	4.4	3.8	8.0	7.8	6.4	2.9	27.1	1.4	6.5	16.7
Total	124.7	303.4	203.6	115.6	375.5	202.4	392.9	307.4	1,063.3	1,293.9	2,990.9	3,199.2

Location	1983	1985	1987	1989	1991	1993	1995	1997	1999	2001	2003	2005
Humpy Creek	26.9	11.4	2.0	91.4	0							
Halibut Cove and Lagoon[b]		0	28.5	249.6	91.1							
Tutka Bay	616.0	491.2	56.5	632.1	116.5							
Seldovia	43.3	3.8	1.2	1.1	0.3							
Pt. Graham Bay	4.1	12.5	2.3	0	0							
Dogfish Bay	0.2	0	0	0	0							
Port Chatham	3.3	7.0	0	9.7	7.5							
Windy Bay	0	4.8	0	0	49.1							
Rocky Bay	1.3	0	0	0	0							
Port Dick	140.0	455.6	3.0	0	289.7							
Nuka Bay	55.0	150.8	20.9	43.0	10.6							
Resurrection Bay	27.1	74.6	11.8	0	0							
Bruin Bay	0.3	0	1.2	202.8	45.1							
Rocky/Ursus Coves	0	0	69.4	53.8	0							
Iniskin and Cottonwood Bays	0.3	0	53.8	0	0							
Miscellaneous	9.8	18.0	0	13.4	218.8							
Total	927.6	1,229.7	201.4	1,296.9	828.7							

[a] Data source: IBM computer runs, 1959 - 1991.
[b] Halibut Cove and Lagoon were part of Humpy Creek Subdistrict prior to 1984.

Appendix Table 20. Commercial pink salmon catch in thousands of fish by subdistrict during even-numbered years, Lower Cook Inlet, 1960 - 1990[a].

Location	1960	1962	1964	1966	1968	1970	1972	1974	1976	1978	1980	1982
Humpy Creek	71.6	108.8	82.4	40.7	43.9	114.1	2.1	35.4	73.1	44.0	53.3	6.0
Tutka Bay	87.6	279.5	100.9	53.5	26.9	43.9	5.2	5.5	18.0	167.9	312.5	184.9
Seldovia	42.6	142.8	37.4	44.1	23.6	29.0	0.2	3.5	3.0	35.8	81.7	70.3
Pt. Graham Bay	7.1	18.1	38.4	5.1	23.0	19.6	1.1	4.5	3.9	4.0	30.5	35.4
Dogfish Bay	1.8	1.4	0.1	7.1	0	9.8	0.3	0	0	0.3	4.7	1.7
Port Chatham	15.7	102.2	67.1	6.7	10.0	1.9	0	0	0	0	1.8	12.6
Windy Bay	29.2	85.5	68.6	20.1	3.4	0.8	0	0	0	0	0	0
Rocky Bay	17.0	225.9	53.2	0	10.8	36.8	0	0	0	0	1.4	0
Port Dick	257.4	1,118.3	526.3	296.8	55.0	336.5	0	0.6	0	63.6	133.3	44.0
Nuka Bay	26.6	129.8	23.8	0	90.2	48.4	0.3	0.7	0.1	6.3	12.8	8.7
Resurrection Bay	5.8	0.1	0.3	0	37.4	40.2	18.2	0	35.4	29.7	155.8	137.4
Bruin Bay	2.6	0	0	0	126.2	10.2	0	0	0	0	100.6	13.3
Rocky/Ursus Coves	6.6	3.2	13.5	2.9	18.0	7.5	0	0	0	0.1	0	20.2
Iniskin and Cottonwood Bays	2.1	3.2	4.3	0	9.9	3.5	0	0	0.1	0.1	0.1	0.4
Miscellaneous	37.9	29.5	39.1	102.2	107.1	14.0	1.3	0.4	2.8	0.8	0.2	16.7
Total	611.6	2,248.3	1,055.4	579.2	585.4	716.2	28.7	50.6	136.4	352.6	889.7	551.6

Location	1984	1986	1988	1990	1992	1994	1996	1998	2000	2002	2004	2006
Humpy Creek	53.5	116.7	0	0								
Halibut Cove and Lagoon[b]	10.9	0	111.0	91.0								
Tutka Bay	262.0	400.2	723.9	37.4								
Seldovia	2.2	2.8	5.5	3.6								
Pt. Graham Bay	8.0	8.8	10.7	0								
Dogfish Bay	0.1	0	0	0								
Port Chatham	0	0	0	22.1								
Windy Bay	0	0	0	0								
Rocky Bay	0	0	0	0								
Port Dick	84.6	304.0	5.9	169.1								
Nuka Bay	4.4	97.8	0.2	0.2								
Resurrection Bay	122.3	36.5	0.5	0								
Bruin Bay	125.2	349.7	5.0	0.4								
Rocky/Ursus Coves	8.5	71.1	49.9	0								
Iniskin and Cottonwood Bays	0.4	0.2	1.3	0								
Miscellaneous	18.5	20.5	7.4	59.9								
Total	700.6	1,408.3	921.3	383.7								

[a] Data source: IBM computer runs, 1960 - 1990.
[b] Halibut Cove and Lagoon were part of Humpy Creek Subdistrict prior to 1984.

Appendix Table 21. Commercial chum salmon catch in numbers of fish by district, Lower Cook Inlet, 1971 - 1991[a].

Year	Southern	Outer	Kamishak	Eastern	Total
1971	2,857	118,995	26,327	423	148,602
1972	4,936	43,466	26,374	767	75,543
1973	3,588	76,286	35,584	55	115,513
1974	2,725	11,924	4,554	7	19,210
1975	5,428	11,348	4,868	2	21,646
1976	1,517	412	48,848	45	50,822
1977	6,734	70,167	65,659	3,229	145,789
1978	5,525	19,224	48,669	100	73,518
1979	8,221	180,558	29,711	0	218,490
1980	4,605	32,246	35,921	720	73,492
1981	20,920	238,393	73,501	3,279	336,093
1982	18,446	63,075	108,946	7,698	198,185
1983	14,281	27,203	142,901	7,934	192,319
1984	8,065	3,204	70,736	10,535	92,540
1985	5,513	11,844	8,139	5,144	30,640
1986	5,560	11,701	61,670	3,757	82,688
1987	5,030	28,663	108,412	14,913	157,018
1988	7,742	71,202	218,299	24,668	321,911
1989	3,141	43	7,809	312	11,305
1990	2,433	614	3,597	307	6,951
1991	1,962	14,337	7,853	80	24,232
20 Year Avg.	6,863	51,028	56,526	4,195	118,614
1971-80 Avg.	4,614	56,463	32,652	535	94,263
1981-90 Avg.	9,113	45,594	80,401	7,855	142,965
'91 % of Total	8.10	59.17	32.41	0.33	100.0

[a] Data source: Final IBM computer runs.

Appendix Table 22. Commercial chum salmon catch in thousands of fish by subdistrict, Lower Cook Inlet, 1959 - 1991[a].

Location	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970
Tutka	0.1	2.4	1.8	2.9	2.4	5.6	1.1	3.9	4.0	1.3	0.7	1.6
Port Graham	2.3	1.8	0.5	4.0	3.8	2.1	0.9	5.3	3.0	2.3	1.3	4.8
Dogfish	4.9	0.4	0.1	0	0.2	0	0	7.0	15.3	0.1	0	50.9
Port Chatham	1.0	2.5	0	2.8	4.3	5.2	0	17.8	0	1.0	0	0.1
Rocky-Windy	14.9	6.4	2.2	8.5	0.3	33.8	8.1	1.7	0	0.5	0	39.4
Port Dick	42.4	51.0	36.8	112.0	110.8	227.4	14.2	60.9	36.0	10.9	5.4	41.2
Nuka	1.7	8.4	1.7	0.5	1.5	0	0	0	1.5	6.9	0	5.9
Resurrection	0.1	0.5	0	0	0	0	0	0	0.1	0.7	0	0.6
Douglas River	0.2	0	0	0	0	0	0	0	0	0	0	0
Kamishak River	0	0	0	0	0	0	0	0	0	3.7	0.4	0
McNeil River	0	0.4	0	0	0	2.7	0.9	0	0.4	8.3	4.4	1.9
Bruin	0	0.3	0.5	0	0.1	0	0.4	0	1.0	7.5	0	12.8
Ursus/Rocky	8.5	8.6	1.8	1.1	2.8	1.2	0	4.0	2.9	1.0	3.6	8.9
Cttnwood/Iniskin	12.1	33.4	10.2	41.7	10.9	38.4	0	0	19.0	25.5	44.4	71.9
Miscellaneous	22.6	0	0	5.8	1.4	6.9	2.5	28.5	2.2	5.4	1.0	2.4
Total	110.8	116.1	55.6	179.3	138.5	323.3	28.1	129.1	85.4	75.1	61.2	242.4

Location	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Tutka	0.5	1.3	0.8	1.4	2.0	0.9	0.8	2.6	2.7	1.8	7.9	8.3
Port Graham	2.0	3.2	2.6	1.0	2.2	0.5	5.0	2.4	4.3	2.5	11.2	7.4
Dogfish	114.5	41.1	0.4	0	0	0	9.4	0	8.5	2.1	71.8	15.6
Port Chatham	2.4	0	0.4	0	0.6	0	0.1	0	1.7	1.3	59.6	16.2
Rocky-Windy	1.4	0	0.9	0	0.3	0	17.7	0	76.7	2.1	7.4	0
Port Dick	0.7	0	33.4	8.1	6.8	0	25.6	10.3	79.0	19.0	95.8	30.3
Nuka	0.1	2.3	40.8	3.9	3.6	0.4	17.4	0.4	14.7	7.8	3.8	0.9
Resurrection	0.4	0.7	0	0	0	0	0	0.1	0	0.7	2.4	7.7
Douglas River	0	0	0	0	0.1	7.1	4.0	2.9	0.7	10.0	46.7	37.1
Kamishak River	0	2.4	0	1.8	0	10.5	0	23.9	17.8	2.8	8.6	9.2
McNeil River	0	2.3	0	2.0	0	16.9	38.5	4.9	6.5	6.3	11.6	32.6
Bruin	1.6	1.8	0	0.7	0	0	0	0	4.0	11.0	1.7	1.3
Ursus/Rocky	10.3	0.2	5.7	0	2.0	2.8	7.8	1.9	0.5	0.3	1.5	13.5
Cttnwood/Iniskin	14.5	19.7	29.9	0	2.8	11.5	15.3	14.9	0.2	5.4	3.5	21.6
Miscellaneous	0.2	0.5	0.6	0.3	1.2	0.2	4.2	9.2	1.2	0.4	2.6	3.5
Total	148.6	75.5	115.5	19.2	21.6	50.8	145.8	73.5	218.5	73.5	336.1	198.0

Location	1983	1984	1985	1986	1987	1988	1989	1990	1991
Tutka	9.9	3.4	3.2	3.9	3.9	4.7	2.5	1.5	0.8
Port Graham	1.7	3.6	1.3	0.8	0.4	1.2	0	0	0
Dogfish	2.8	1.1	0	0	0	0	0	0	0
Port Chatham	2.1	0	1.3	0	0	0	0	0.1	0.1
Rocky-Windy	3.2	0	0	0	0	0	0	0	0.5
Port Dick	18.0	1.9	9.6	10.4	27.1	64.4	0	0.5	13.7
Nuka	0.8	0.2	0.8	1.3	1.6	6.8	0	T	T
Resurrection	6.9	3.0	3.0	3.5	13.9	23.9	0	0	0
Douglas River	27.2	9.2	8.0	11.6	23.7	24.8	0	0.1	3.0
Kamishak River	23.9	16.2	0.1	0.1	24.6	26.7	0	T	0.7
McNeil River	67.9	12.0	0	13.7	32.9	104.0	0.1	0.1	0.1
Bruin	2.6	5.9	0	5.4	0.1	2.8	4.4	0.1	2.6
Ursus-Rocky	0	3.7	0	22.1	17.2	20.7	3.4	0	0
Cttnwood/Iniskin	21.4	23.0	0	8.8	9.7	39.2	0	0	1.0
Miscellaneous	3.9	9.3	3.3	1.1	1.9	2.7	0.9	4.7	1.7
Total	192.3	92.5	30.6	82.7	157.0	321.9	11.3	7.0	24.2

[a] Data source: IBM computer runs, 1959-91.

Appendix Table 23. Estimated sockeye salmon escapements in thousands of fish for the major spawning systems of Lower Cook Inlet, 1961 - 1991[a].

Year	English Bay	Ander. Beach	Delight Lake	Desire Lake	Bear Lake[b]	Aialik Lake	Mikfik Lake	Chenik Lake	Amakde. Creek	Kam. River	Doug. River	Doug. Beach	Total
1961	10.0	1.0	10.0	10.0	3.0	10.0	3.0	0.1	2.5	-	-	-	49.6
1962	2.0	0.2	5.0	4.0	3.6	16.0	2.6	1.5	2.5	-	2.5	-	39.9
1963	10.0	-	8.0	1.4	8.9	20.0	0.2	0.3	7.0	-	-	-	55.8
1964	-	-	0.3	10.0	4.7	2.0	-	-	-	-	-	-	17.0
1965	3.0	-	-	-	3.8	-	-	-	-	-	-	-	6.8
1966	3.0	-	4.3	9.0	1.9	4.0	-	0.2	2.0	-	-	-	24.4
1967	6.0	-	-	0.3	3.3	-	-	2.5	0.2	-	-	-	12.3
1968	-	-	-	0.3	59.0	-	0.7	-	-	-	-	-	60.0
1969	5.0	-	-	8.0	21.2	-	-	-	1.5	-	-	-	35.7
1970	8.0	-	4.6	2.0	5.8	-	1.0	-	0.3	-	-	-	21.7
1971	6.5	-	5.0	5.0	0.4	3.0	5.0	2.0	1.2	-	-	-	28.1
1972	14.5	-	10.0	8.0	0.7	0.6	13.0	0.7	1.0	-	-	-	48.5
1973	4.4	-	2.5	5.2	0.2	1.5	2.7	0.3	2.2	-	-	-	19.0
1974	-	-	-	-	0.1	2.2	0.9	0.1	0.4	-	-	-	3.7
1975	2.5	-	2.0	6.5	0	8.0	6.0	0.1	0.8	-	-	-	25.9
1976	6.0	-	6.0	11.0	0.6	8.0	10.0	0.9	1.6	-	0.2	0.1	44.4
1977	12.5	-	5.2	10.7	0	5.0	9.8	0.2	2.6	-	2.6	0.4	49.0
1978	13.5	0.6	8.0	10.0	0	3.0	12.0	0.1	2.6	1.0	-	0.1	50.9
1979	4.4	-	8.0	12.0	0	5.0	6.0	0	1.0	0.4	-	0.3	37.1
1980	12.0	0.3	10.0	17.0	1.5	6.6	6.5	3.5	2.6	0.1	0.4	0.5	61.0
1981	10.5	-	7.3	12.0	0.7	1.8	5.3	2.5	1.9	0.8	0.2	0.3	43.3
1982	20.0	0.6	25.0	18.0	0.5	22.4	35.0	8.0	3.2	10.0	4.2	1.6	148.5
1983	12.0	0.5	7.0	12.0	0.7	20.0	7.0	11.0	1.2	5.0	0.5	0.4	77.3
1984	11.1	1.2	10.5	15.0	0.5	22.0	6.0	13.0	1.4	2.5	0	0.1	83.3
1985	5.0	0.1	26.0	18.0	1.1	8.0	20.0	3.5	0.9	0.8	0	0	83.4
1986	2.8	0.9	13.0	10.0	0.8	7.6	7.8	7.0	1.9	5.0	0.2	0.2	57.2
1987	7.0	0.2	10.5	13.4	0.3	9.2	9.0	10.0	1.1	-	0.1	-	60.8
1988	2.5	0.3	1.2	9.0	0.1	13.0	10.1	9.0	0.4	0.5	0	0.1	46.2
1989	4.5	-	7.7	9.0	0.1	6.5	11.5	12.0	1.2	0.5	0.6	0.2	53.8
1990	3.3	-	5.2	9.5	1.1	5.7	8.8	17.0	1.8	0.2	0.6	-	53.2
1991	7.0	-	4.1	8.2	0.7	3.7	9.7	10.2	1.9	0.7	-	0.1	46.3
Total	202.0	5.9	202.3	256.3	124.6	211.1	199.9	105.5	47.0	26.8	12.1	4.3	1,397.8
1961-90 Avgerage	7.5	0.5	8.1	9.2	4.2	8.4	8.0	4.2	1.7	2.2	0.9	0.3	55.2
Es.Goal	10-20	1	10	10	1	2.5-5	5-7	10	1	*	*	*	51-66

[a] Estimated escapements are either peak aerial survey counts or adjusted aerial survey counts based on survey conditions and time of surveys.

[b] Limited by Bear Lake Management Plan since 1971.

Appendix Table 24. Estimated pink salmon escapements in thousands of fish for the major spawning systems of Lower Cook Inlet, 1960 - 1991[a].

Stream	Year											
	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Humpy Creek	10.0	22.6	56.0	34.7	18.5	28.0	30.0	25.0	24.7	5.4	55.2	45.0
China Poot	9.0	2.0	26.0	-	-	-	-	2.5	6.0	0.2	1.5	2.1
Tutka Lagoon	15.0	15.0	30.0	10.0	20.0	20.0	12.0	7.0	7.9	6.5	6.5	16.7
Barabara Creek	2.0	0.1	1.5	0.1	-	-	5.0	-	2.0	0.9	0.4	4.0
Seldovia River	25.0	25.0	50.0	13.0	60.0	30.0	86.0	55.0	53.2	60.0	23.0	31.1
Port Graham River	15.0	5.0	50.0	2.0	16.0	1.5	24.0	2.0	24.4	4.0	16.6	13.2
Dogfish Lagoon	2.0	-	3.0	-	-	-	-	-	-	-	-	0.3
Port Chatham Creeks	4.0	7.0	7.0	-	-	-	10.0	-	-	-	3.0	15.5
Windy Right Creek	8.0	10.0	12.5	4.9	6.2	2.0	7.0	6.0	2.8	3.2	2.1	13.0
Windy Left Creek	8.0	5.0	12.5	4.5	7.7	10.0	7.0	6.0	6.9	23.0	13.0	35.4
Rocky River	130.0	2.0	200.0	12.0	80.0	0.3	44.0	1.0	43.1	1.0	32.0	1.6
Port Dick Creek	35.0	14.0	40.0	16.0	31.5	50.0	35.0	20.0	29.0	12.0	34.5	97.8
Island Creek	23.2	2.0	15.0	3.6	30.0	0.5	7.0	0.5	4.3	0.1	5.5	0.1
South Nuka Creek	20.0	2.0	22.0	0.1	10.0	-	10.0	-	10.0	3.0	11.0	14.0
Desire Lake Creek	-	-	18.0	-	1.3	-	-	-	-	-	-	30.0
James Lagoon	-	-	-	-	-	-	-	-	-	-	-	-
Aialik Lagoon	-	-	25.0	0.3	-	-	2.0	-	-	-	-	-
Bear Creek	1.4	-	3.1	-	6.4	-	-	-	3.1	-	-	-
Salmon Creek	-	-	-	-	-	-	-	-	-	-	-	-
Thumb Cove	-	-	-	-	-	-	-	-	-	-	-	-
Humpy Cove	-	-	-	-	-	-	-	-	-	-	-	-
Tonsina Creek	-	-	-	-	-	-	-	-	2.9	0.1	-	-
Big Kamishak River	-	-	100.0	75.0	75.0	-	13.0	-	-	-	-	-
Little Kamishak River	-	-	100.0	24.0	-	-	28.0	3.5	-	0.5	2.0	-
Amakdedori Creek	60.0	-	80.0	-	10.0	-	8.0	-	-	1.0	13.0	-
Bruin Bay River	18.0	-	300.0	25.0	-	-	20.0	0.5	-	5.0	40.0	22.0
Sunday Creek	1.5	-	5.0	2.0	-	-	20.0	-	-	1.0	2.0	43.0
Brown's Peak Creek	-	-	25.0	10.0	20.0	10.0	11.0	-	-	2.0	-	8.0
Total	387.1	111.7	1181.6	237.2	392.6	152.3	379.0	129.0	220.3	128.9	261.3	392.8

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Appendix Table 24. (page 2 of 3)

Stream	Year											
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982	1983
Humpy Creek	13.8	36.9	17.4	64.0	27.2	86.0	46.1	200.0	64.4	115.0	31.9	104.0
China Poot	1.0	6.0	5.2	21.6	2.0	3.9	11.2	20.6	12.3	5.0	3.1	14.1
Tutka Lagoon	1.5	6.5	2.6	17.6	11.5	14.0	15.0	10.6	17.3	21.1	18.5	12.9
Barabara Creek	0.6	-	0.2	22.7	0.2	5.7	1.4	10.0	5.8	16.8	2.1	14.8
Seldovia River	5.8	14.5	13.7	36.2	25.6	35.7	24.6	43.7	65.5	62.7	38.4	27.9
Port Graham River	2.4	7.0	2.8	27.3	6.5	20.6	6.7	32.7	40.2	18.4	28.9	4.6
Dogfish Lagoon	-	1.0	-	2.3	-	8.1	0.6	7.3	0.3	2.6	2.6	1.0
Port Chatham Creeks	1.0	5.0	0.2	7.7	-	14.2	0.3	20.8	7.7	11.2	2.0	3.5
Windy Right Creek	0.1	4.6	0.1	18.7	0.2	11.1	0.3	10.4	3.3	4.7	4.7	4.3
Windy Left Creek	0.4	12.9	0.1	9.7	0.2	47.3	1.1	74.8	10.9	31.3	4.4	11.9
Rocky River	8.2	2.0	1.5	4.4	2.7	36.7	8.2	85.0	6.4	25.0	6.6	16.6
Port Dick Creek	10.0	26.4	1.5	62.8	12.7	109.3	44.9	116.0	56.1	106.0	19.9	64.1
Island Creek	1.7	0.5	0.5	0.1	-	0.6	0.4	0.6	2.2	25.0	15.0	15.3
South Nuka Creek	0.3	16.0	-	28.0	-	12.0	-	15.0	0.3	16.0	0.4	22.2
Desire Lake Creek	0.3	3.0	-	0.4	0.6	0.8	1.0	3.0	16.0	5.0	12.0	8.5
James Lagoon	-	-	-	-	-	-	-	-	4.6	14.0	6.0	5.1
Aialik Lagoon	-	-	0.1	-	0.4	-	-	-	-	-	5.0	3.0
Bear Creek	0.5	-	4.9	-	10.0	-	7.8	-	13.3	0.4	7.9	0.8
Salmon Creek	-	-	-	-	16.9	-	11.0	-	15.5	0.1	21.0	0.5
Thumb Cove	-	-	1.1	-	2.0	-	2.0	-	1.2	1.0	7.9	4.9
Humpy Cove	-	-	0.6	-	1.4	-	0.9	-	5.7	0.4	4.0	2.0
Tonsina Creek	-	-	1.4	-	5.7	-	1.5	-	0.7	0.2	7.5	5.4
Big Kamishak River	-	15.0	1.0	-	8.0	-	12.0	10.0	2.0	-	5.0	-
Little Kamishak River	-	13.0	-	-	6.0	-	0.4	3.5	0.6	-	2.2	-
Amakdedori Creek	0.2	3.0	1.0	5.0	-	-	0.9	6.0	3.8	1.5	6.3	0.2
Bruin Bay River	2.5	2.0	0.6	20.0	13.5	60.0	33.0	200.0	400.0	95.0	75.0	4.0
Sunday Creek	2.0	5.0	0.1	20.0	0.3	9.0	0.2	12.0	5.2	14.2	12.0	4.7
Brown's Peak Creek	1.2	3.2	0.1	10.0	1.2	13.0	0.9	15.0	2.3	17.7	3.5	1.7
Total	53.5	183.5	56.7	378.5	154.8	488.0	232.4	897.0	763.6	610.3	353.8	358.0

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Appendix Table 24. (page 3 of 3)

Stream	Year								1960-90 Average	Goal
	1984	1985	1986	1987	1988	1989	1990[b]	1991[b]		
Humpy Creek	84.2	117.0	49.7	26.6	21.4	93.0	27.0	17.4	51.0	25-50
China Poot	8.4	1.9	11.5	3.1	3.9	8.5	4.2	2.6	7.3	5
Tutka Lagoon	10.5	14.0	13.4	4.8	11.2	11.9	38.5	16.8	13.5	6-10
Barabara Creek	1.0	1.6	1.8	0.3	0.7	4.5	3.9	10.9	4.1	18-24
Seldovia River	14.2	22.8	28.2	7.6	16.9	26.2	27.8	30.0	33.8	25-35
Port Graham River	10.9	26.3	17.5	3.8	7.9	19.1	20.1	29.0	15.4	20-40
Dogfish Lagoon	0.6	0.2	0.4	1.2	0.3	0.2	7.1	9.3	2.2	-
Port Chatham Creeks	7.8	8.9	11.5	10.2	21.0	31.7	27.8	23.8	10.0	10-15
Windy Right Creek	3.4	5.4	2.5	2.0	1.3	6.6	7.1	20.7	5.4	10
Windy Left Creek	2.5	8.9	2.2	5.6	3.4	25.2	7.5	34.5	12.9	30-50
Rocky River	9.0	12.1	12.0	4.5	5.4	10.3	18.0	26.1	26.5	50
Port Dick Creek	44.6	65.3	41.6	4.5	12.0	55.4	41.7	54.2	42.2	20-100
Island Creek	35.0	27.9	16.6	0.1	7.2	6.7	25.0	24.4	9.1	12-18
South Nuka Creek	0.6	3.6	7.0	2.8	1.2	7.3	13.3	16.4	9.5	10
Desire Lake Creek	23.0	62.5	32.0	11.0	2.5	47.0	1.0	1.3	13.3	10-20
James Lagoon	4.0	9.0	6.6	1.1	1.7	4.9	3.8	4.4	5.5	5-10
Aialik Lagoon	4.0	9.4	6.0	1.5	0.7	0.8	-	-	4.5	5
Bear Creek	7.7	4.1	14.0	3.5	0.2	1.7	4.4	15.4[c]	5.0	5
Salmon Creek	10.2	2.1	8.3	1.7	0.1	1.6	-	[c]	7.4	10
Thumb Cove	4.2	14.5	4.0	2.7	0.3	4.2	-	3.4	3.8	4
Humpy Cove	2.5	5.0	0.9	0.3	0.4	1.0	3.8	-	2.1	2
Tonsina Creek	6.0	48.2	11.2	3.4	0.1	0.5	1.2	0.3	6.0	5
Big Kamishak River	-	-	5.0	-	1.0	-	-	-	24.8	20
Little Kamishak River	0.1	1.6	2.0	-	0.5	-	-	0.9	11.7	20
Amakdedori Creek	-	1.0	6.0	0.4	1.0	2.0	0.1	0.7	9.6	5
Bruin Bay River	110.0	3.5	1200.0	24.0	29.0	350.0	19.0	74.9	113.8	25-50
Sunday Creek	12.0	11.4	109.0	29.7	18.0	103.0	2.8	20.9	17.1	10
Brown's Peak Creek	6.8	7.0	28.0	40.2	17.0	120.0	1.0	16.7	14.5	10
Total	423.2	495.2	1648.9	196.6	186.3	943.3	306.1	455.0	482.0	377-593

[a] Estimated escapements are either peak aerial survey counts or adjusted aerial survey counts based on survey conditions and time of surveys.

[b] Escapement estimates in the Southern, Outer, and Eastern Districts derived from periodic ground surveys with stream life factors applied. Kamishak estimates are unexpanded live counts.

[c] Combined escapement count for both Bear and Salmon Creeks.

Appendix Table 25. Estimated chum salmon escapements in thousands of fish for the major spawning systems of Lower Cook Inlet, 1966 - 1991[a].

Year	Port Grhm.	Dogfish Lagoon	Rocky River	Pt.Dk Head	Isl. Creek	Big Kam.	Little Kam.	McNeil River	Bruin Bay	Ursus Cove	Cotton. Creek	Inisk. Bay	Total
1966	-	11.0	7.0	4.0	6.0	5.0	0.5	-	-	-	-	-	33.5
1967	-	15.0	5.0	3.0	5.0	-	-	-	-	-	-	-	28.0
1968	1.5	1.5	3.0	20.0	1.5	-	-	-	-	-	5.0	5.0	37.5
1969	-	-	3.0	4.5	4.0	-	-	-	-	-	-	-	11.5
1970	0.9	5.0	-	6.0	8.5	-	-	-	-	-	0.6	-	21.0
1971	1.0	5.0	7.0	3.0	3.5	-	-	-	1.0	-	9.0	13.0	42.5
1972	1.5	3.0	3.0	6.0	2.0	-	-	-	1.0	1.6	4.0	10.0	32.1
1973	2.0	1.0	2.0	9.0	7.0	4.0	1.0	10.0	8.0	3.0	4.0	12.0	63.0
1974	0.5	0.6	1.0	0.8	5.0	7.1	0.6	1.5	3.0	3.5	2.5	7.0	33.1
1975	3.0	5.0	25.0	4.0	7.4	1.1	1.9	1.5	1.5	5.0	8.0	7.0	70.4
1976	0.4	3.0	12.0	1.5	1.0	24.0	21.0	10.0	4.0	6.0	5.0	13.5	101.4
1977	5.2	6.4	10.5	5.0	11.1	-	-	20.0	18.0	9.3	10.0	4.4	99.9
1978	4.8	9.3	6.3	8.9	16.9	23.0	30.0	45.0	4.0	9.7	12.5	11.4	181.8
1979	2.2	8.2	35.0	4.0	16.8	15.0	15.0	8.0	15.0	5.0	2.5	4.0	130.7
1980	1.1	4.0	23.0	4.2	10.9	10.0	13.0	8.0	15.0	8.0	4.2	9.3	110.7
1981	4.8	11.5	12.5	4.1	17.5	11.0	6.0	30.0	10.0	10.0	9.0	9.0	135.4
1982	2.5	8.5	2.8	1.7	8.7	25.0	18.0	25.0	10.0	9.0	7.0	12.8	131.0
1983	1.9	5.3	4.0	4.5	36.2	25.0	25.0	48.0	5.5	7.7	8.3	12.0	183.4
1984	2.1	8.6	3.5	2.7	25.6	19.0	12.0	21.0	8.0	7.0	6.5	9.8	125.8
1985	0.5	4.9	2.5	1.0	9.1	6.0	4.5	9.5	2.0	3.0	3.0	5.0	51.0
1986	0.6	2.5	2.0	1.7	8.6	24.0	17.0	22.0	2.0	11.0	11.0	5.9	108.3
1987	1.5	2.0	0.2	6.1	13.2	12.0	18.0	26.0	10.0	9.9	17.0	9.1	125.0
1988	3.5	8.6	0.3	9.0	7.8	15.0	13.0	49.0	7.0	9.4	16.0	9.5	148.1
1989	1.3	1.8	1.2	3.3	4.8	30.0	12.0	34.0	8.0	6.3	8.0	5.9	116.6
1990	2.6	1.0	0.8	1.1	2.3	2.5	7.9	8.0	4.0	3.8	4.3	8.4	46.7
1991	1.1	3.1	-	7.4	17.3	8.7	8.4	10.0	6.0	1.3	7.7	8.3	79.3
1966-90 Total	45.4	132.7	172.6	119.1	240.4	258.7	216.4	376.5	137.0	128.2	157.4	184.0	2,168.4
1966-90 Average	2.1	5.5	7.2	4.8	9.6	14.4	12.0	20.9	6.9	6.7	7.2	8.8	106.1
Es.Goal	4-8	5-10	20	4	10-15	20	20	20-40	5-10	5-10	10	10	133-177

[a] Estimated escapements are either peak aerial survey counts or adjusted aerial survey counts based on survey conditions and time of surveys.

Appendix Table 26. Personal use/subsistence set gillnet fishery salmon catches in numbers of fish by species, Southern District, Lower Cook Inlet, 1969-1991.

Year	Total Permits Issued	Permits Returned Number	Permits Returned %	Permits Actually Fished	Permits Not Fished	NUMBERS OF FISH Chinook	Sockeye	Coho	Pink	Chum	Other	Total
1969	47	44	93.6	35	9	0	9	752	38	0	17	816
1970	78	73	93.6	55	18	0	12	1,179	143	13	39	1,386
1971	112	95	84.8	53	42	2	16	1,549	44	7	20	1,638
1972	135	105	77.8	64	41	1	11	975	48	69	19	1,123
1973	143	128	89.5	82	46	0	18	1,304	84	40	9	1,455
1974	148	118	79.7	52	66	0	16	376	43	77	27	539
1975	292	276	94.5	221	55	4	47	1,960	632	61	95	2,799
1976	242	221	91.3	138	83	16	46	1,962	1,513	56	75	3,668
1977	197	179	90.9	137	42	12	46	2,216	639	119	84	3,116
1978	311	264	84.9	151	113	4	35	2,482	595	34	89	3,239
1979	437	401	91.8	238	163	6	37	2,118	2,251	41	130	4,583
1980	533	494	92.7	299	195	43	32	3,491	1,021	25	153[a]	4,765
1981	384	374	97.4	274	100	25	64	4,314	732	89	100	5,324
1982	395	378	95.7	307	71	39	46	7,303	955	123	8	8,474
1983	360	328	91.1	210	118	4	21	2,525	330	40	2	2,922
1984	390	346	88.7	219	127	4	25	3,666	821	87	25	4,628
1985	316	302	95.6	205	97	5	43	3,372	166	35	3	3,624
1986	338	310	91.7	247	63	7	68	3,831	3,132	56	0	7,094
1987	361	338	93.6	249	89	5	50	3,977	279	61	0	4,372
1988	438	404	92.2	287	117	14	60	4,877	1,422	75	0	6,448
1989	466	452	97.0	332	120	41	156	7,215	882	53	49	8,396
1990	578	543	93.9	420	123	12	200	8,323	1,846	69	0	10,450
1991	472	459	97.2	295	164	8	47	4,931	366	23	0	5,375
1969-90 Avgerage	305	281	92.1	194	86	11	48	3,171	801	56	43	4,130

[a] Steelhead.

Appendix Table 27. Summary of fishermen in Lower Cook Inlet personal use / subsistence salmon gillnet fisheries by area of residence, 1974 - 1991.

	AREA OF RESIDENCE OF PERMITTEE																
	Homer/ Fritz Cr.		Anchorage Area		Halibut Cove		Anchor Pt./ Ninilchik		Seldovia		Pt. Graham/ English Bay		Kenai/ Soldotna		Other		Total Permits
Year	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	No.	%	Issued
1974	108	73.0	20	13.5	6	4.1	4	2.7	1	0.7	3	2.0	5	3.4	1	0.7	148
1975	118	75.2	13	8.3	6	3.8	7	4.5	5	3.2	2	1.3	4	2.5	2	1.3	157
1976	182	70.0	24	9.2	9	3.5	25	9.6	5	1.9	4	1.5	6	2.3	5	1.9	260
1977	153	77.3	8	4.0	8	4.0	17	8.6	7	3.6	0	0.0	2	1.0	3	1.6	198
1978	214	68.8	40	12.9	5	1.6	30	9.6	12	3.8	3	1.0	4	1.3	3	1.0	311
1979	276	62.7	67	15.2	2	0.5	61	13.9	3	0.7	0	0.0	11	2.5	20	4.6	440
1980	310	58.2	81	15.2	0	0.0	80	15.0	7	1.3	0	0.0	42	7.9	13	2.4	533
1981	274	71.4	43	11.2	8	2.1	37	9.6	3	0.8	1	0.3	14	3.6	4	1.0	384
1982	295	74.7	19	4.8	9	2.3	44	11.1	0	0.0	0	0.0	7	1.8	21	5.3	395
1983	267	77.9	24	7.0	3	0.9	33	9.6	8	2.3	0	0.0	0	0.0	8	2.3	343
1984	266	72.0	20	5.4	6	1.6	62	16.8	5	1.4	1	0.3	5	1.4	4	1.1	369
1985	251	79.4	15	4.8	6	1.9	33	10.4	6	1.9	0	0.0	2	0.6	3	1.0	316
1986	280	82.8	18	5.3	4	1.2	29	8.6	1	0.3	0	0.0	1	0.3	5	1.5	338
1987	284	78.7	25	6.9	3	0.8	37	10.3	7	1.9	0	0.0	2	0.6	3	0.8	361
1988	338	77.2	36	8.2	5	1.1	43	9.8	6	1.4	0	0.0	10	2.3	0	0.0	438
1989	348	74.7	36	7.7	5	1.1	51	10.9	8	1.7	0	0.0	6	1.3	12	2.6	466
1990	441	76.3	36[a]	6.2	5	0.9	65	11.2	12	2.1	0	0.0	6	1.0	13	2.3	578
1991	384	81.4	27[a]	5.7	8	1.7	41	8.7	6	1.3	0	0.0	4	0.8	2	0.4	472
1974-90 Avg.	259	72.7	31	8.7	5	1.4	39	11.0	6	1.7	1	0.3	8	2.2	7	2.0	356

[a] Includes Eagle River, Chugiak, Wasilla, and/or Elmendorf.

Appendix Table 28. Subsistence salmon catch in numbers of fish by species for the village of Port Graham, Lower Cook Inlet, 1981 - 1991[a].

Year	Chinook	Sockeye	Coho	Pink	Chum	Total	House-holds
1981[b]	116	1,694	625	298	150	2,883	47
1982[b]	98	798	508	851	193	2,448	38
1983[c]	57	1,066	440	169	65	1,797	31
1984[c]	21	2,095	166	215	6	2,503	34
1985[c]	156	469	190	42	22	879	[d]
1986[b]	118	279	179	234	13	823	36
1987[e]	21	186	574	264	69	1,114	31
1988[f]	90	380	447	577	88	1,582	31
1989	48	94	555	524	46	1,267	32
1990	180	472	811	1,107	68	2,638	31
1991	178	61	355	1,454	173	2,221	32
1981-90 Average	91	753	450	428	72	1,793	35

[a] Data source: ADF&G, Subsistence Division, data files.
[b] Data include both subsistence set gillnet and rod/reel harvest.
[c] Data include only subsistence set gillnet harvest.
[d] No data.
[e] Forty-six percent set gillnet harvest, fifty-four percent rod/reel.
[f] Fifty-one percent set gillnet harvest, forty-nine percent rod/reel.

Appendix Table 29. Subsistence salmon catch in numbers of fish by species for the village of English Bay, Lower Cook Inlet, 1981 - 1991[a].

Year	Chinook	Sockeye	Coho	Pink	Chum	Total	House-holds
1981[b]	24	1,075	314	621	19	2,053	29
1982[b]	13	1,584	1,305	1,850	36	4,788	31
1983[c]	0	1,784	367	363	10	2,524	28
1984[c]	18	1,225	385	404	0	2,032	26
1985[c]	5	696	530	313	2	1,546	[d]
1986[b]	4	378	296	825	2	1,505	21
1987[e]	2	626	322	476	45	1,471	21
1988[f]	8	609	385	1,185	35	2,222	26
1989	0	60	651	868	0	1,579	29
1990	46	636	616	1,968	49	3,305	30
1991	4	574	1,508	3,087	46	5,219	35
1981-90 Average	12	867	517	887	20	2,303	27

[a] Data source: ADF&G, Subsistence Division, data files.
[b] Data include both subsistence set gillnet and rod/reel harvest.
[c] Data include only subsistence set gillnet harvest.
[d] No data.
[e] Sixty-three percent set gillnet harvest, thirty-seven percent rod/reel harvest.
[f] Thirty-seven percent set gillnet harvest, sixty-three percent rod/reel.

Appendix Table 30. FRED Division and/or CIAA salmon stocking projects and releases of salmon fry, fingerling and smolt, in millions of fish, Lower Cook Inlet, 1984-1991.

Lake, River or Bay	Species	1984	1985	1986	1987	1988	1989	1990	1991
Leisure Lake	Sockeye	2.110	2.018	2.350	2.022	2.100	2.000	1.750	2.000
Chenik Lake	Sockeye	-	-	0.839	1.000	2.600	3.500	3.250	2.200
Paint River Lakes:									
Upper	Sockeye			0.500	-	1.100	1.000	1.000	0.500
Lower	Sockeye			0.320	-	0.552	0.500	0.500	0.250
Elusivak	Sockeye					0.521	0.500	0.500	0
Kirschner Lake	Sockeye				0.867	0.521	0.250	0.250	0.250
Bruin Lake	Sockeye							0.500	0.250
Port Dick Lake	Sockeye				0.705	0.222	0.430	0	0
Hazel Lake	Sockeye					0.783	1.000	1.250	1.300
English Bay Lakes	Sockeye							0.350	0.241
Bear Lake	Sockeye						2.200	2.400[a]	1.619[a]
Total		2.110	2.018	4.009	4.594	8.399	11.380	11.750	8.610
Tutka Bay Hatchery:	Pink	14.730	19.560	22.500	19.570	12.000	30.100	23.600	23.600
	Chum	0.026	0.018	0.449	4.050	3.180	2.103	1.500	0
Caribou Lake	Coho		0.139	0.138	0.150	0.150	0.182	0.180	0.180
Seldovia Lake	Coho		0.083	0.072	0.045	0.045	0.080	0.050	0.050
Seldovia Bay	Chinook				0.084	0.084	0.108	0.099	0.091
Halibut Cove Lagoon:	Chinook		0.098	0.101	0.094	0.094	0.115	0.112	0.092
	Pink			2.000	3.000	3.000	6.000	6.000	6.000
Homer Spit:	Chinook		0.152	0.104	0.104	0.104	0.212	0.220	0.191
	Pink				0.295	0.300	0.332	0.303	0.303
	Coho					0.060	0.143	0.123	0.100

[a] Includes both fingerlings and "zero check" smolts (see text).

Appendix Table 31. Catch of Pacific herring in short tons and effort in number of permits by district in the commercial sac roe seine fishery, Lower Cook Inlet, 1971 - 1991[a].

Year	Southern		Kamishak		Eastern		Outer		Total	
	Tons	Permits	Tons	Permits	Tons	Permits	Tons	Permits	Tons	Permits
1971	13	2	0		831	22	0		844	24
1972	1	1	0		30	1	0		31	2
1973	204	16	243	14	831	25	301	12	1,579	37
1974	110	7	2,114	26	47	5	384	26	2,655	45
1975	24	5	4,119	40	-		-		4,143	41
1976	0		4,842	66	-		-		4,842	66
1977	291	13	2,908	57	-		-		3,199	58
1978	17	7	402	44	-		-		419	44
1979	13	[b]	415	[b]	-		-		428	[b]
1980	-		-		-		-		-	
1981	-		-		-		-		-	
1982	-		-		-		-		-	
1983	-		-		-		-		-	
1984	-		-		-		-		-	
1985			1,132	23	204	7	12	2	1,348	29
1986	-		1,959	54	167	4	28	3	2,154	57
1987	-		6,132	63	584	4	202	9	6,918	69
1988	-		5,548	75	0		0		5,605	75
1989	170	6	4,801	75	0		0		4,971	75
1990	-		2,264	75	-		-		2,264	75
1991	-		1,992	58	0		0		1,992	58
Avg.										
71-90	84	6	2,459	44	299	8	103	7	2,760	50
71-80	75	7	1,671	31	435	13	171	10	2,016	40
81-90	-		3,639	61	191	3	48	3	3,877	63

[a] Data source: Final IBM computer runs.
[b] Effort data unavailable.

Appendix Table 32. Estimated herring biomass and commercial purse seine catch of herring in short tons, exploitation rates, average roe recoveries, number of permits fished, and exvessel value in millions of dollars, Kamishak Bay District, Lower Cook Inlet, 1978 - 1991.

Year	Spawning Biomass[a]	Commercial Catch	Total Biomass	Percent Exploitation	Average Roe %	No. of Permits	Exvessel Value[b]
1978	800	402	1,202	33.4	-	44	[c]
1979	2,900	415	3,315	12.5	-	[c]	[c]
1980	-	0	-	-	-	-	-
1981	5,130	0	5,130	-	-	-	-
1982	4,835	0	4,835	-	-	-	-
1983	4,750	0	4,750	-	-	-	-
1984	2,885[d]	0	6,500	-	-	-	-
1985	12,188	1,132	13,320	8.5	11.3	23	1.0
1986	24,042	1,959	26,001	7.5	10.4	54	2.2
1987	29,200	6,132	35,332	17.4	11.3	63	8.4
1988	24,000	5,548	29,548	18.8	11.1	75	9.3
1989	30,900	4,801	35,701	13.5	9.5	75	3.5[e]
1990	17,400	2,264	19,650	11.5	10.8	75	1.8
1991	16,171[f]	1,992	18,163[f]	11.0	11.3	58	1.3
Avg.[g]	13,508	1,890	15,675	12.1	10.7	58	4.4

[a] Spawning biomass estimates are minimal estimates based on aerial surveys.
[b] Exvessel values exclude any postseason retroactive adjustments.
[c] Data not available.
[d] Spawning had already begun on first survey. Total spawning biomass estimate was higher than the peak survey estimate of 2,885 tons.
[e] Includes retroactive adjustment.
[f] Due to poor aerial survey conditions, 1991 biomass was calculated from the preseason estimate of abundance, adjusted to match observed age composition samples in the 1991 catch.
[g] Average excludes 1980 when no data was available.

Appendix Table 33. Summary of herring sac roe seine fishery openings and commercial harvests in the Kamishak Bay District of Lower Cook Inlet, 1969 - 1991.

Year	Dates of Openings	Total Hrs. Open	Harvest (tons)	Catch Rate (tons/ hr. open)	No. of Permits
1969-73	No Closed Periods				
1974	1/1 - 5/20		2,114		26
1975	1/1 - 6/6	(Closed Iniskin Bay 5/17)	4,119		40
1976	1/1 - 5/21	(Closed Iniskin Bay 5/17; reopened Kamishak 6/2)	4,842		66
1977	1/1 - 5/31	(Closed Kamishak Dist. 5/12; reopened 5/14 - 5/17; reopened 5/29 - 5/31)	2,908		57
1978[a]	4/16 - 5/31	96	402	4.2	44
1979	5/12 - 5/15	72	415	5.8	[b]
1980	CLOSED	0	0	-	-
1981	CLOSED	0	0	-	-
1982	CLOSED	0	0	-	-
1983	CLOSED	0	0	-	-
1984	CLOSED	0	0	-	-
1985	4/20 - 6/15	1,350 (56.2 days)	1,132	0.8	23
1986	4/20 - 6/13	1,303 (54.3 days)	1,303	1.5	54
1987	4/21 - 4/23	65	6,132	94.3	63
1988	4/22 - 4/29	42	5,548	132.1	75
1989	4/17 - 4/30	24.5	4,801	196.0	75
1990	4/22 - 4/23	8	2,264	283.0	75
1991	4/26	1	1,992	1,992.2	58

[a] Management by emergency order began.
[b] Effort data unavailable.